STATE OF CALIFORNIA
The Resources Agency
Department of Water Resources

BULLETIN No. 177-70

WATERMASTER SERVICE IN NORTHERN CALIFORNIA

1970 SEASON

DECEMBER 1971

NORMAN B. LIVERMORE, JR.
Secretary for Resources
The Resources Agency

RONALD REAGAN
Governor
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WILLIAM R. GIANELLI
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FOREWORD

Bulletin No. 177-70 discusses the watermaster service provided by the Department of Water Resources to areas in Northern California during the 1970 watermaster season. Authority to prepare this report is described in the California Water Code, Division 2, Part 4, Chapter 7.

The bulletin is presented in two parts. Part I contains general information about water rights, water supply, service areas, and watermaster duties. Part II contains the specifics of the 1970 watermaster season, including the streamflow in the various service areas, the methods of distribution, and all other information pertinent to 1970 watermaster activities.

William R. Gianelli

William R. Gianelli, Director
Department of Water Resources
The Resources Agency
State of California
December 11, 1971

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

RONALD REAGAN, Governor
NORMAN B. LIVERMORE, JR., Secretary for Resources
WILLIAM R. GIANELLI, Director, Department of Water Resources

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ABSTRACT

The primary purpose of watermaster service is to distribute water among users in accordance with their established water rights. This is accomplished by apportioning available supplies in streams which have had water right determinations.

Watermaster service was provided by the Department of Water Resources to 17 areas in Northern California during the 1970 watermaster season. They are: Ash Creek, Big Valley, Burney Creek, Butte Creek, Cow Creek, Digger Creek, French Creek, Hat Creek, Indian Creek, Middle Fork Feather River, North Fork Cottonwood Creek, North Fork Pit River, Shackleford Creek, Shasta River, South Fork Pit River, Surprise Valley, and Susan River.

Above average water supply conditions existed in essentially all of these areas during the 1970 irrigation season, as the streamflows throughout Northern California were above the long-term average.

The bulletin is presented in two parts. Part I contains general information about water rights, water supply, and watermaster areas and duties. Part II contains specific information for each service area during the 1970 watermaster season, including available streamflow, methods, and amounts of water distribution, and all other information pertinent to 1970 watermaster activities.

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1. ASH CREEK
2. BIG VALLEY
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4. BUTTE CREEK
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STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATERMASTER SERVICE AREAS IN NORTHERN CALIFORNIA

SCALE OF MILES
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PART I - GENERAL INFORMATION

Distribution of water in watermaster service areas is a continuing statutory function of the Department of Water Resources as provided in Part 4 of Division 2 of the California Water Code.

The primary purpose of watermaster service is to distribute water in accordance with established water rights. This is accomplished by apportioning available supplies in streams which have had water right determinations.

A major benefit of watermaster service to water users and the State is that court litigation and physical violence, which in past years occurred quite frequently, are essentially eliminated. Under watermaster service each water right owner is assured that his rights are being protected without his having to take legal action against other users. Another important benefit results from increased use of available supplies through reduction of wasted water.

Because both the water right owners and the State receive benefits from watermaster service, the costs of performing the service are shared. The State general tax fund pays for one-half the cost of operating each service area. The water right owners in the service area pay the other one-half.

Determination of Water Rights

Water rights determinations for purposes of establishing a watermaster service area may be accomplished by "statutory" adjudication, "court" adjudication, permit or license to appropriate, or by agreement.

The California Water Code (Sections 2500-2900) contains procedures whereby water users on any stream may petition to have the State Water Resources Control Board, Division of Water Rights, make a legal determination of water rights on that stream. If the Board finds that such a determination is in the public interest, it proceeds with a Statutory Adjudication. This adjudication ultimately results in a court decree which defines all water rights on the stream.

A similar but less extensive method of defining water rights involves a "court" adjudication procedure. When an action is brought before the Superior Court in the county in which there is a water rights dispute, the court has two methods available for its settlement. It may refer the action to the State Water Resources Control Board for a determination under authority contained in Sections 2000-2076 of the Water Code. Or, it may make an investigation of the facts and render a decision without referral to the Board.

These court adjudications determine only the water rights of parties named in the action and therefore do not necessarily define all water rights on the stream. Consequently, they sometimes precipitate serious conflicts between decreed water right owners and persons claiming rights for riparian lands which were not considered in the decree.

Almost all of the streams under state watermaster service have had their water rights defined by the courts under one of the above adjudication procedures. These adjudications (decrees) establish each owner's rights as to allowable rate of diversion, season of use, point of diversion, and place of use. They also establish priorities whereby each owner's rights are shown in relation to the rights of all other decreed owners.

Under the priority system all first priority rights must be fully satisfied

before water can be diverted to any lower priority rights (second, third, etc.). When a shortage occurs within any priority, the available water is proportioned among all owners of that priority.

Description of Watermaster Service Areas

A watermaster service area may be created either by petition from water users (Section 4050 of the Water Code) or by order of a Superior Court.

The first watermaster service areas were created in September 1929, while the most recent addition was made in November 1968. Prior to 1929, some watermaster service was provided in accordance with the Water Commission Act of 1913. There are now about 50 streams in Northern California which are under state watermaster service. These are combined into the 18 service areas shown on Figure 1. Sixteen are in the Northern District and two are in the Central District. The Seiad Creek service area is presently inactive.

The service areas are located primarily in the mountainous northeastern part of the State where the growing season varies between about 100 and 140 days. Meadow hay and alfalfa are the principal crops under irrigation, although a considerable amount of land is used exclusively for pasturing livestock. Most irrigation is accomplished by gravity systems, with water users diverting directly from the streams at one or more diversion points. However, pumped diversions and sprinkler irrigation systems are becoming popular in some areas.

Table 1 lists all watermaster service areas in Northern California, the date each was created, and the corresponding decrees and agreement under which each is operated.

Schematic drawings of the major stream systems within each service area are presented in Figures 2 through 18. These drawings show the relative location of major roads, stream gaging stations, diversion points, and water right allotments for each diversion. The diversion points shown in these figures correspond to those listed in the respective decrees which define the water rights.

Watermaster Responsibilities

To assure the proper distribution of water within his service area, each watermaster must ascertain the amount of water available and distribute it both by amount and priority in accordance with established water rights. To accomplish his purposes, the watermaster is provided authority both by the Water Code and by provisions of pertinent court decrees or voluntary agreements to physically regulate the various streams in the service area. He is further authorized to supervise the design, construction, operation and maintenance of diversion dams, headgates, and measuring devices.

Each watermaster supervises water distribution at approximately 100 to 200 diversions in one or more service areas. The frequency of visiting these diversion points substantially increases in years of short water supply.

Permanent measurement and control devices, which the State requires at each owner's main point of diversion, are constructed by the water users under supervision of the watermaster. Installation of accurate, easily set, and lockable structures is a continuing objective of watermaster service, since once they are built, conflicts among water users almost always stop. Also, the watermaster's ability to visit and set each diversion on a

TABLE I

SUPERIOR COURT DECREES REGULATING WATER DISTRIBUTION

Watermaster Service Area	System	County	Decree Number	Decree Date	Type*	Date Watermaster Service Area Created	Remarks
Ash Creek	[illegible] Creek	Modoc ** and Lassen	[illegible]	10-27-47	CR	4-03-59	Included as part of Big Valley service area 1949 through 1958.
Big Valley	Pit River	Modoc ** and Lassen	6395	2-17-59	S	11-13-34	Service provided in accordance with recorded agreement in 1934. Service area operated under recorded agreement 1935 through 1958, and under decree since 1959.
Burney Creek	Pittman Creek	Shasta	5711	1-30-26	CR	9-11-29	Service provided in accordance with decree since 1926.
Butte Creek	Butte Creek	Butte	[illegible]17	11-08-42	S	1-07-43	
Cow Creek	North Cow Creek	Shasta	5804	4-29-32	CR	10-17-32	
	Cow Run Creek	Shasta	5701	1-22-32	CR	10-17-32	
	Clover Creek	Shasta	6904	10-04-37	CR	1-21-38	Included in Cow Creek service area.
Digget Creek	Digget Creek	Shasta and Tehama **	2213	8-12-99	C	6-11-64	
			3214	5-27-13	C		
			3327	10-16-17	C		
			4570	2-24-27	C		
French Creek	French Creek	Siskiyou	14478	7-01-58	CR	11-19-68	
Hat Creek	Hat Creek	Shasta	5724	5-14-24	CR	9-11-29	Service provided in accordance with decree since 1924.
			7858	10-07-35	CR		
Indian Creek	Indian Creek	Plumas	4165	5-19-50	S	2-19-51	
Middle Fork Feather River	Middle Fork Feather River	Plumas ** and Sierra	3095	1-22-40	S	3-29-40	
North Fork Cottonwood Creek	North Fork Cottonwood Creek	Shasta	5476	6-09-20	CR	9-11-29	Service provided intermittently in accordance with the decree since 1924.
North Fork Pit River	North Fork Pit River and all tributaries except Franklin Creek	Modoc	4074	12-14-39	S	12-18-39	All stream systems consolidated into North Fork Pit River service area 12-13-40.
	New Pine Creek	Modoc	2841	6-14-32	CR	6-22-32	
	Davis Creek	Modoc	2782	6-30-32	CR	7-13-32	
	Franklin Creek	Modoc	3118	9-08-33	CR	9-14-33	
	Cottonwood Creek	Modoc	2344	5-03-40	CR	12-13-40	
Serad Creek	Serad Creek	Siskiyou	13774	4-10-50	S	11-06-50	Service provided in accordance with decree by order of the court in 1950. Service suspended since September 1954.
Shackleford Creek	Shackleford Creek	Siskiyou	13775	4-10-50	S	11-06-50	Service provided in accordance with decree by order of the court in 1950.
Shasta River	Shasta River	Siskiyou	7035	12-29-32	S	3-01-33	
South Fork Pit River	South Fork Pit River	Modoc ** and Lassen	3273	10-30-34	CR	12-31-34	Service includes operation of West Valley Reservoir (built subsequent to issuance of decree) in accordance with the demands of South Fork Irrigation District.
	Pine Creek	Modoc	Agreement	11-22-33		1-12-35	
Surprise Valley	Cedar Creek	Modoc	1206	5-22-01	C	9-11-29	All adjudicated stream systems in Surprise Valley were consolidated into the Surprise Valley service area on 1-10-38. Bidwell Creek was added on March 16, 1960. Service started on Cedar Creek in 1926 in accordance with the decree. Service was provided on Soldier and Owl Creeks in 1929 in accordance with the decrees by order of the court.
			2343	2-15-23	C		
	Soldier Creek	Modoc	2405	11-28-28	CR	9-11-29	
	Owl Creek	Modoc	2410	4-29-29	CR	9-11-29	
	Lemagne Creek	Modoc	2840	3-25-30	CR	4-02-03	
	Willow Creek	Modoc	3024	12-19-31	CR	12-30-31	
	Deep Creek	Modoc	3101	1-25-34	CR	12-29-34	
	Pine Creek	Modoc	3191	12-07-36	CR	1-13-37	
	Rocky Creek	Modoc	3628	6-04-37	CR	6-12-37	
	Eagle Creek	Modoc	2304	4-05-26	C	1-10-39	
			3284	11-05-37	CR		
	Bidwell Creek	Modoc	6420	1-13-60	S	3-16-60	
Susan River	Susan River	Lassen	4571	4-16-40	CR	11-10-41	
	Baxter Creek	Lassen	8174	12-15-55	S	2-16-56	
	Parker Creek	Lassen	8175	12-15-55	S	2-16-56	

* Explanation of type of Decree.

C Court adjudication (court makes determination from evidence submitted - no report of referee).

CR Court adjudication (referred to State Water Resources Control Board for investigation and report).

S Statutory adjudication - State Water Resources Control Board is petitioned by water users to make a determination of all water rights on a stream system).

** Decree entered by the Superior Court of this county.

regular basis is greatly facilitated by good structures.

The watermaster is often called upon to make immediate field or on-the-spot interpretations of various court decrees, agreements, etc. Since most of these documents were written more than 30 years ago, many situations have developed that were not initially considered. Therefore, the watermaster must use sound, careful, and practical judgment in attempting to reach workable solutions to water disputes. To accomplish this he must possess a good understanding of California Water Law.

Water Supply

Water supply in the watermaster service areas is derived principally from unregulated runoff of small streams. Peak runoff, mostly snowmelt, occurs in the spring, with relatively small streamflow occurring in the summer and early fall. Additional supplies from storage reservoirs and ground water pumping are used in some areas to supplement natural streamflow.

In some service areas the water supply must be predicted in advance to determine the date watermastering will begin and, to some extent, the manpower needed. The Department's Bulletin No. 120 series, "Water Conditions in California", is used to assist in these predictions.

Precipitation

The streamflow available for distribution is affected by total precipitation, amount of snowpack, air temperature, and the amount of rainfall received during the irrigation season. The latter is particularly important in the Upper Pit River-Surprise Valley areas, where about 25 to 30 percent of the annual precipitation occurs in April, May and June. Spring storms, which are normally accompanied by cooler temperatures, materially affect both the supply and the demand for water. Temperatures in the spring affect the demand for water and the manner in which snowmelt runoff occurs. A hot, dry spring depletes the water supply very early, even in years of normal snowpack. A cold, wet spring can extend the supply well into the irrigation season, but cold temperatures retard the growth of crops and are not necessarily desirable.

Data collected at representative snow courses showing the snowpack as of April 1, 1970 on all courses and the snowpack on May 1 and June 1 at selected courses is presented in Table 2. This information was obtained from the Department's Bulletin No. 120-70.

Table 3 presents information on precipitation at selected stations in the service areas. The seasonal precipitation gives an indication of the related water supply available for distribution and provides a basis for comparing the current year's supply with a long-term average supply.

Streamflow

The general water supply available for diversion within each watermaster area is determined from stream gaging stations placed at key locations in the main stream channels. Several major stations are installed and maintained by the United States Geological Survey or by the Department of Water Resources as part of a Federal-State program for collection of year-round streamflow records. In addition, several stream gaging stations are installed and operated by the watermaster during the irrigation season to provide supplemental information. Also, water stage recorders are often installed by the watermaster in selected diversion ditches to further assist him in proper distribution of the various water right allotments.

Table 4 presents runoff data at selected stream gaging stations in or near the

TABLE 2

SNOWPACK AS OF APRIL 1 AND MAY 1, 1970 AT REPRESENTATIVE SNOW COURSES

Watermaster Service Area	Snow Course*	Elevation (in feet)	WATER CONTENT OF SNOW (IN INCHES) April 1 Average	April 1 1970	In Percent of April 1 Average	May 1 1970**	In Percent of April 1 Average
Shackleford Creek	Parks Creek	6,700	34.0	39.2	115		
Shasta River	Middle Boulder No 1	6,800	30.5	31.8	104	25.8	84
	Little Shasta	8,200	20.0	18.2	91		
Ash Creek	Blue Lake Ranch	7,300	9.8	7.8	77		
Big Valley	Eagle Peak	7,200	15.6	14.0	90		
North Fork Pit River	Cedar Pass	7,100	16.7	14.2	85	14.7	88
South Fork Pit River	Adin Mountain	6,350	13.2	10.9	83	8.2	62
Surprise Valley							
Burney Creek	Thousand Lakes	8,500	35.7	36.2	101	33.9	95
Cow Creek	New Manzanita Lake	5,900	7.7	0.0	0	0.0	0
Digger Creek	Burney Springs	4,700	2.4	0.0	0		
Hat Creek							
Butte Creek	Humbug Summit	4,850	11.6	0.0	0		
Susan River	Silver Lake Meadows	6,450	27.6	28.7	104	19.3	70
	Fredonyer Pass No. 1	5,750	8.6	0.0	0		
Indian Creek	Independence Lake	8,450	40.3	38.7	99	41.9	104
Middle Fork Feather River	Mount Oeyer No. 1	7,100	24.3	23.6	97	21.4	88
	Rowland Creek	8,700	17.4	18.2	105	16.4	94
	Yuba Pass	8,700	30.4	15.8	52	3.9	13

* Snow courses are listed according to elevation within each major grouping of watermaster service areas. They do not necessarily correspond to a specific service area.

** Data collected for selected courses.

TABLE 3

PRECIPITATION AT SELECTED STATIONS - 1969-70 SEASON

Station Name	County	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.	Total	Percent Of Mean
Fort Jones Ranger Station	Siskiyou	1.45	0.55	8.82	10.44	2.26	0.98	0.65	0.37	0.96	0.41	0.00	0.09	27.03	124
		1.59	2.77	4.02	4.06	3.14	2.21	0.96	1.11	0.81	0.35	0.34	0.40	21.78	
Happy Camp Ranger Station	Siskiyou	4.87	1.77	17.36	23.95	4.51	3.15	1.06	0.69	0.32	0.00	0.00	0.01	57.71	105
		4.07	7.25	10.41	11.21	8.24	6.45	2.72	2.16	1.06	0.36	0.17	0.74	54.86	
Yreka	Siskiyou	1.25	0.66	7.67	6.01	0.90	1.75	0.21	0.14	1.10	1.99	0.00	0.02	23.90	135
		1.45	2.00	3.30	3.19	2.28	1.61	0.92	1.03	0.66	0.27	0.38	0.45	17.76	
Chico Experiment Station	Butte	1.42	1.13	10.34	11.78	2.35	2.55	0.25	0.08	1.45	0.00	0.00	0.00	31.36	120
		1.46	2.41	5.12	5.03	4.43	3.29	2.31	1.18	0.44	0.01	0.01	0.33	26.06	
Redding Fire Station No 2	Shasta	1.57	2.31	15.09	28.84	2.77	3.01	0.18	0.26	1.20	0.00	0.00	0.00	85.23	142
		2.27	3.76	7.26	7.89	6.19	4.90	2.95	1.74	1.31	0.11	0.13	0.61	38.92	
Hat Creek Power House No 1	Shasta	2.42	1.25	6.56	6.46	1.45	1.55	0.34	0.20	3.36	0.00	0.00	0.12	23.73	131
		1.30	1.83	2.93	2.65	2.64	2.02	1.35	1.26	0.77	0.28	0.16	0.47	18.06	
Graber, Babcock Ranch	Lassen	2.00	1.05	6.29	7.47	0.67	2.08	0.98	0.63	4.60	0.06	0.40	0.46	27.11	*
		*	*	*	*	*	*	*	*	*	*	*	*	*	
Lakeview, Oregon	Lake	2.51	0.98	3.66	5.61	1.09	1.21	0.78	0.93	2.43	T	T	0.19	19.80	137
		1.21	1.37	1.86	1.84	1.71	1.52	1.15	1.51	1.26	0.22	0.17	0.56	14.44	
Alturas Ranger Station	Modoc	1.77	0.70	2.65	3.85	0.59	1.46	0.84	0.84	2.61	T	0.00	0.17	15.28	119
		1.07	1.35	1.63	1.62	1.45	1.37	1.03	1.31	1.03	0.31	0.22	0.43	12.82	
Jess Valley	Modoc	2.32	0.77	2.66	3.85	0.47	1.53	2.25	1.29	2.36	0.11	0.02	0.13	18.00	105
		1.31	1.66	1.92	1.88	1.95	1.68	1.64	2.02	1.62	0.41	0.26	0.68	17.22	
Cedarville	Modoc	2.95	0.74	3.61	4.14	0.46	1.05	1.35	0.76	2.31	0.13	0.00	0.53	18.25	142
		1.17	1.41	1.69	1.84	1.50	1.45	0.99	1.04	0.84	0.33	0.15	0.37	12.88	
Susanville Airport	Lassen	1.81	0.74	4.21	7.11	1.85	1.96	0.40	0.54	1.62	0.00	0.05	0.00	20.29	140
		0.92	1.51	2.56	2.53	2.51	1.51	0.62	0.63	0.67	0.18	0.09	0.35	14.48	
Greenville Ranger Station	Plumas	2.22	2.36	11.42	19.54	3.63	4.61	1.23	1.06	1.41	0.00	0.00	0.00	47.48	111
		2.81	4.81	5.93	6.89	7.44	6.47	2.64	1.71	0.75	0.35	0.21	0.95	42.96	
Sierraville Ranger Station	Sierra	2.26	0.65	7.54	14.07	2.04	1.30	1.72	0.10	1.30	0.00	0.28	0.36	31.84	125
		1.83	2.76	4.48	4.94	4.23	2.84	1.63	1.25	0.54	0.29	0.15	0.44	25.39	
Vinton	Plumas	1.48	0.77	4.18	6.72	1.15	0.40	0.75	0.17	1.56	0.17	0.00	0.17	17.52	137
		0.88	1.44	2.12	1.84	1.87	1.43	0.84	1.01	0.50	0.36	0.16	0.25	12.83	

* Data unavailable.

Note: Figures above line are for current season; below line are long-term averages

TABLE 4

RUNOFF AT SELECTED STATIONS

1969-70 SEASON

(In acre-feet)

Station	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Average	Percent Average
Shasta River near Yreka	11,350	11,750	24,750	60,380	27,520	24,550	9,060	6,320	4,850	2,190	1,420	3,520	189,800	127,400	149
Hat Creek near Hat Creek	9,300	9,190	10,360	13,990	10,720	10,840	9,880	12,480	13,430	10,940	9,780	9,200	129,900	94,840	137
Pit River near Canby	6,450	5,300	14,550	103,500	28,260	37,740	13,570	20,460	16,240	5,870	3,340	5,280	270,600	164,300	165
South Fork Pit River near Likely	2,490	1,440	1,450	3,060	1,320	3,120	6,360	16,480	10,490	5,730	10,020	4,800	66,750	51,910	129
Susan River at Susanville	803	1,020	4,040	41,970	10,430	10,280	4,520	11,440	6,150	3,130	3,140	503	102,400	89,070	148
Indian Creek near Crescent Mills	5,440	7,100	26,720	230,200	82,060	69,760	36,220	46,410	16,500	3,870	1,330	1,820	512,200	385,600	133
Middle Fork Feather River near Clio	5,370	8,280	21,600	127,500	46,680	36,730	17,810	14,060	8,240	3,390	1,640	1,750	294,300	198,900	148
Butte Creek near Chico	9,430	9,210	47,360	166,700	47,240	50,030	22,760	19,330	14,660	9,250	7,980	7,860	411,300	282,300	146

service areas. Runoff data at stream gaging stations used by the watermasters are contained in tables following the description of each area. These data are used in conjunction with schedules showing total water rights to determine the adequacy or shortage of the water supply. Essentially all watermaster service areas experienced above-average water supplies during the 1970 irrigation season. In most areas total streamflow runoff between April 1 and September 30 was above average.

PART II - 1970 WATERMASTER SERVICE

This part of the report gives a general geographical description of each watermaster service area and the major sources of water supply therein. The usual methods of distribution of the water supply of the 1970 season are discussed. Special occurrences in some areas are also mentioned.

Ash Creek Watermaster Service Area

The Ash Creek service area is located in Modoc and Lassen Counties near the town of Adin. There are 30 water right owners in this area with total allotments of 123.65 cubic feet per second.

The major sources of water supply for the service area are Ash Creek and three tributaries, Willow Creek, Rush Creek, and Butte Creek. Ash Creek rises in the eastern part of the service area and flows westerly through the town of Adin into Ash Creek Swamp and then into the Pit River. Rush Creek heads in the northeastern part of the service area and joins Ash Creek above the town of Adin. Willow Creek and Butte Creek originate in the southeastern part of the service area and join Ash Creek near the head of Ash Creek Swamp. Each of these streams is independently regulated.

Approximately 85 percent of the water rights in the service area are in Big Valley, west of the town of Adin. The remaining water rights are along the upstream tributaries and in Ash Valley. The portion of Big Valley served is approximately 10 miles long by 6 miles wide, extending from the town of Adin to the confluence of Ash Creek and the Pit River. The valley floor is at an elevation of approximately 4,200 feet.

A schematic drawing of each major stream system within the Ash Creek service area is presented as Figure 2, page 13.

Water Supply

The water supply for Ash and Rush Creeks is derived primarily from snowmelt, since most of the watershed is between 5,000 and 6,000 feet in elevation. Willow Creek and Butte Creek receive a substantial portion of their water from springs. These creeks normally have sufficient water to satisfy demands until about June 1, after which the supply decreases rapidly. By the latter part of June, Ash Creek normally has receded to about 20 cubic feet per second, Rush Creek to about two cubic feet per second, Willow Creek to about five cubic feet per second, and Butte Creek to less than one cubic foot per second. The flow of these creeks then remains nearly constant for the remainder of the season.

The daily mean discharge of Ash Creek at Adin is presented in Table 5, page 12. This stream gaging station is located below a substantial number of the points of diversion; consequently, the table does not include all of the available supply of this creek.

No stream gaging stations were installed on Butte, Rush, or Willow Creeks during the 1970 season.

Method of Distribution

Irrigation diversions from Ash Creek and its tributaries are accomplished by small dams placed in the stream channels. Most of the users have several diversion ditches at these dams. These ditches convey the water to the fields where it is spread by means of small laterals. Some of the users employ a system of checks and borders, but most of the land is irrigated by wild flooding. Return flow is captured by downstream ranches for reuse. In one case a rancher may recirculate his drain water before returning it to the creek for further use. In a few areas, pumps are used to divert the water into ditches or through sprinkler systems.

The Ash Creek decree (see Table 1) establishes the number of priority classes on the various stream systems within the Ash Creek service area as follows: Ash Creek - five; Willow Creek - four; Rush Creek - one; and Butte Creek - two.

1970 Distribution

Watermaster service began May 1 in the Ash Creek service area and continued until September 30. Lynn W. Peterson, Water Resources Technician II, was watermaster during this period.

Willow Creek. The available water supply in Willow Creek was sufficient to satisfy all allotments (four priorities until the first of June. The flow then dropped rapidly, cuasing regulation of second priority allotments to begin during the first week in June. Throughout the remainder of June and continuing until late August, the flow receded gradually. At this time, and for the remainder of the season, about 50 percent of the second priority allotments were served.

Butte Creek. The available water supply in Butte Creek was sufficient to satisfy all allotments (two priorities) until late spring. During the remainder of the season the flow gradually decreased; however, no distribution problems were encountered.

Ash Creek. The available water supply in Ash Creek was sufficient to meet all demands (five priorities) until the latter part of June. For most of the remainder of the irrigation season, water was available for first priority allotments only.

Rush Creek. The available water supply in Rush Creek was sufficient to satisfy all allotments (one priority) until the end of July. By late September the flow had gradually decreased to about 85 percent of all allotments.

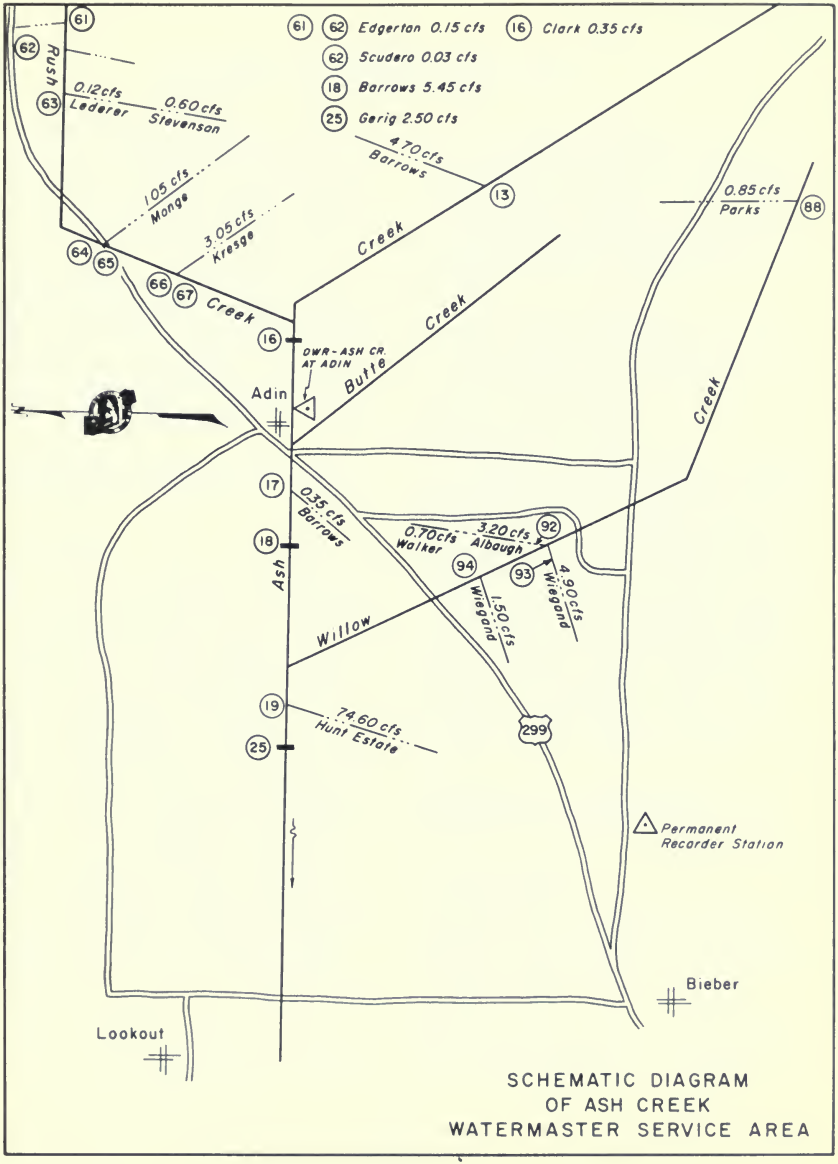
ASH CREEK WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 5

ASH CREEK AT ADIN

Day	March	April	May	June	July	August	September	Day
1	212	93	38	82	34	22	9.6	1
2	154	91	39	56	21	21	10	2
3	139	88	40	50	21	21	10	3
4	139	85	43	46	21	21	13	4
5	132	83	41	38	22	20	18	5
6	136	81	46	38	20	19	18	6
7	266	79	43	39	19	28	14	7
8	662	78	41	41	19	35	13	8
9	409	76	44	41	18	32	12	9
10	345	74	41	38	18	30	14	10
11	283	73	42	38	18	30	15	11
12	242	72	38	38	18	30	15	12
13	218	70	38	40	17	30	18	13
14	206	69	40	49	18	27	17	14
15	182	69	37	50	17	23	18	15
16	166	66	45	46	18	28	18	16
17	161	60	63	36	19	29	18	17
18	155	56	76	24	21	26	18	18
19	150	61	74	19	18	28	23	19
20	146	56	97	18	26	25	22	20
21	142	54	102	13	29	23	21	21
22	138	48	106	15	25	24	22	22
23	135	46	101	18	20	36	21	23
24	132	38	100	18	24	37	19	24
25	126	37	89	18	23	31	19	25
26	117	36	75	23	23	20	20	26
27	112	35	69	32	23	11	21	27
28	106	36	68	50	23	14	21	28
29	104	40	66	44	23	17	21	29
30	100	39	63	33	22	11	22	30
31	96		63		21	9.5		31
Mean	188	63.0	60.7	35.7	21.3	24.5	17.4	Mean
Runoff In Acre-Feet	11530	3750	3730	2120	1310	1510	1020	Runoff In Acre-Feet



SCHEMATIC DIAGRAM
OF ASH CREEK
WATERMASTER SERVICE AREA

Big Valley Watermaster Service Area

The Big Valley service area is located in Modoc and Lassen Counties in the vicinity of the towns of Lookout and Bieber. There are 51 water right owners in the area with total allotments of 231.03 cubic feet per second.

The Pit River is the major source of water supply for the service area. The river enters the valley north of the town of Lookout and flows southerly through the western part of the valley and out its southern end. The major place of use is about 13 miles of valley floor along the Pit River at an approximate elevation of 4,200 feet.

A schematic drawing of the Big Valley stream system is presented as Figure 3, page 18.

Water Supply

The available water supply in the Pit River as it flows through Big Valley is ordinarily adequate to satisfy all demands until about June 1. The irrigation practices in Hot Springs Valley, located about 20 miles upstream from Big Valley, have a significant effect on the available water supply in Big Valley throughout the remainder of the irrigation season. Water users in Hot Springs Valley divert most of the flow in Pit River for two- or three-week periods. Natural flow available for use in Big Valley during these periods is often less than 20 cubic feet per second. Periodic releases from channel storage reservoirs in the lower end of the valley sometimes increase the flow to as much as 200 to 300 cubic feet per second for relatively short periods. Consequently, equitable water distribution in Big Valley is very difficult to attain.

Roberts Reservoir, located on a minor tributary of the Pit River at the upper end of Big Valley above Lookout, serves as a supplemental source of water to those users in the area who are members of the Big Valley Mutual Water Company. Water from this reservoir is released into the Pit River and distributed to members of the water company along with the natural flow to which they are entitled.

Records of two stream gaging stations in the Big Valley service area are presented in Tables 6 and 7, page 17.

Method of Distribution

Most water users in the Big Valley service area irrigate on a rotation schedule by either wild flooding or by checks and borders. Large flashboard dams placed in the channel make it possible to use the large heads of water characteristic of the supply in the area. In addition, some pumps are used for diversion, both in ditches and directly into sprinkler systems. The ranches which irrigate by wild flooding must use large heads of water in order to cover unleveled or high ground. Much of the runoff is recaptured for use by downstream lands, resulting in a relatively high irrigation efficiency for the valley.

The Big Valley decree (see Table 1) provides for the distribution of water from Pit River in four priority classes.

1970 Distribution

Watermaster Service began in the Big Valley service area on May 1 and continued through September 30. Virgil D. Buechler, Water Resources Technician II, was watermaster during this period.

The season began with Big Sage and West Valley Reservoirs at full capacity. West Valley spilled water until July 14.

The snowpack in the Warner Mountains was slightly below normal in May. In June, several storms hit Big Valley and the Warner Mountains, depositing 4 to 5 inches of precipitation in the valley and adding to the existing snowpack in the Warners.

The flows in Pit River near Canby were above normal through June and peaked at 800 cubic feet per second on June 17. Irrigation was halted on June 22 to allow the land to dry up for the haying operation. Three full irrigations had been completed by that time.

On June 28 a rainstorm hit the area, stopping the haying operation for several days; however, the runoff from this storm provided the lower users with a fourth irrigation.

By July 25 the haying operation was completed and an irrigation rotation started. The available water supply was slow in reaching Big Valley. The Alturas and Hot Springs Valley haying had also been delayed by the storm. A 7.5 acre-feet per second-foot ratio rotation was chosen and completed in 27 days. Most of this water was used to fill the sloughs on the various ranches and provide stockwater to all users. The Roberts Reservoir shareholders combined their reservoir water and their river allotment to obtain a 100 percent irrigation. The McArthur and Britten ranches in the lower part of the valley also received a full irrigation by combining their river allotment with their Iverson Reservoir water.

The Roberts Reservoir shareholders irrigated again on August 9, prior to the second river water irrigation. The second and third irrigations were on a 25-acre-feet per second-foot ratio and completed by September 3 and September 15, respectively.

From July 25 to September 3, Roberts Reservoir water was released for use by the shareholders as follows:

Name	Acre-Feet
Eicholz Ranch	100
Cyril Mamath	99
Hunt Estate	143
Oral (Sam) Gerig	167
Ward Kramer	111
Norris Gerig	60
M. Kennedy	50
D. Babock and C. Hawkins	350
Total	1,075

BIG VALLEY WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 8

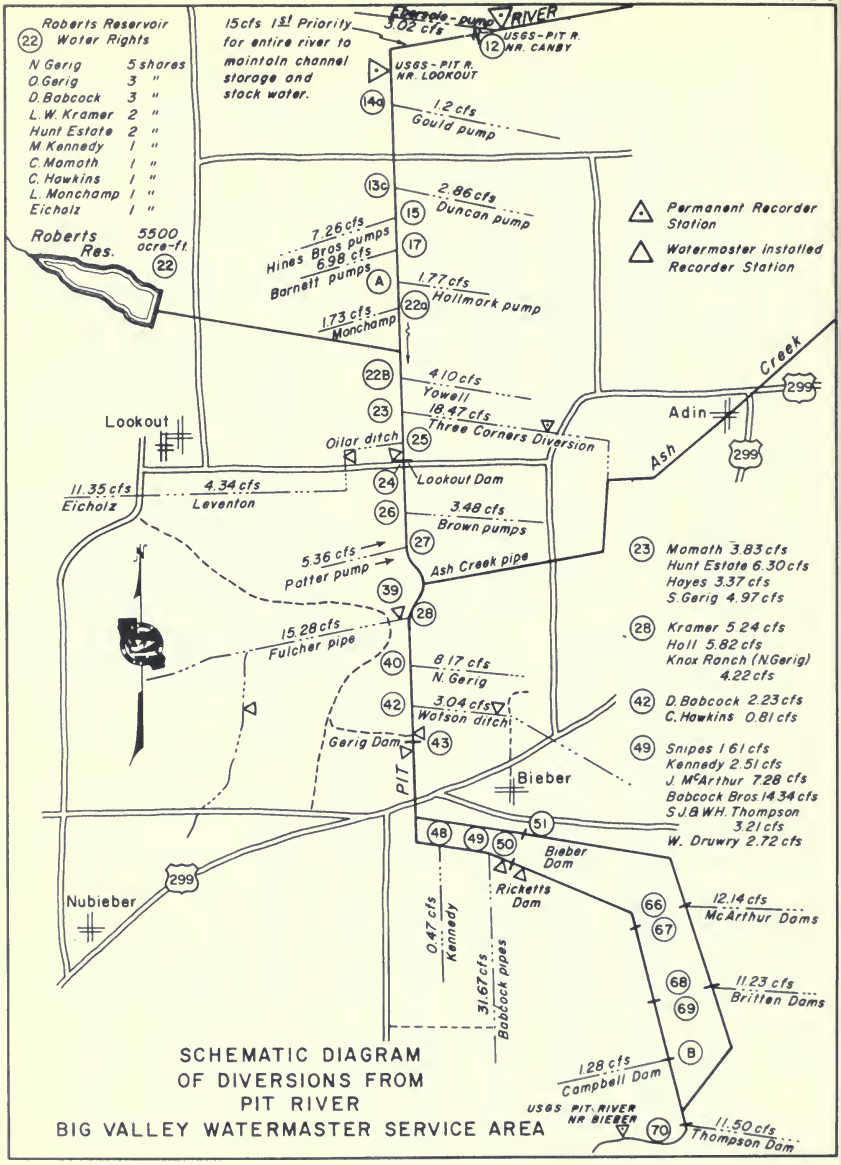
PIT RIVER NEAR CANBY

Day	March	April	May	June	July	August	September	Day
1	347	229	430	235	281	25	71	1
2	406	215	516	305	300	4.9	78	2
3	459	197	507	238	220	1.8	76	3
4	491	190	412	197	179	11	73	4
5	445	169	340	205	99	25	89	5
6	461	155	342	197	120	12	74	6
7	547	194	360	140	134	4.1	86	7
8	964	180	407	168	102	4.9	104	8
9	1340	194	487	212	70	4.5	109	9
10	1530	211	591	220	62	23	110	10
11	1420	190	660	281	55	32	111	11
12	1400	218	739	293	35	20	135	12
13	1090	217	776	323	33	27	111	13
14	880	232	745	355	41	35	104	14
15	803	238	658	375	41	42	97	15
16	765	268	542	405	44	41	87	16
17	641	273	477	461	33	63	83	17
18	553	229	443	385	37	50	80	18
19	499	218	495	346	39	42	72	19
20	463	218	557	310	49	91	72	20
21	442	225	579	281	100	253	87	21
22	421	224	561	235	157	195	86	22
23	405	216	519	173	198	110	99	23
24	380	212	433	144	105	80	132	24
25	333	212	507	273	83	86	113	25
26	303	221	426	346	75	90	91	26
27	271	257	410	310	74	66	84	27
28	254	324	272	293	66	59	79	28
29	240	351	187	246	55	62	55	29
30	237	363	231	238	42	61	23	30
31	236		246		28	61		31
Mean	614	228	479	273	95.4	54.3	88.4	Mean
Runoff In Acre-Feet	37740	13570	29460	16240	5870	3340	5260	Runoff In Acre-Feet

TABLE 7

PIT RIVER NEAR BIEBER

Day	March	April	May	June	July	August	September	Day
1	816	434	414	222	418	4.8	2.7	1
2	1190	422	458	450	386	4.0	2.7	2
3	1250	406	458	364	336	3.1	2.5	3
4	1190	386	466	302	291	2.5	2.3	4
5	1120	364	570	234	280	2.2	2.0	5
6	1070	344	645	179	288	1.8	1.5	6
7	1100	316	354	147	151	1.6	2.2	7
8	1840	330	368	107	132	1.5	2.0	8
9	2880	330	422	114	120	1.3	15	9
10	2980	326	466	112	63	1.0	3.1	10
11	2740	333	550	105	103	0.9	1.8	11
12	2590	336	648	96	107	0.9	2.2	12
13	2390	326	712	168	120	0.8	2.2	13
14	2110	336	781	270	158	0.8	2.0	14
15	1830	358	809	270	81	0.7	2.7	15
16	1620	372	748	237	69	0.6	14	16
17	1450	382	742	461	45	0.6	8.8	17
18	1260	368	630	580	24	0.8	10	18
19	1080	264	530	418	16	0.7	17	19
20	970	267	495	430	14	0.8	16	20
21	900	252	525	375	14	0.7	64	21
22	844	274	555	361	12	0.6	132	22
23	788	288	545	364	9.2	0.8	151	23
24	736	288	478	298	7.2	1.3	116	24
25	694	260	418	243	6.8	1.5	171	25
26	630	154	172	197	6.4	1.6	116	26
27	570	267	9.2	168	7.2	4.2	83	27
28	525	350	28	154	7.2	4.8	60	28
29	495	361	100	298	6.4	4.5	34	29
30	466	386	30	333	5.8	4.2	24	30
31	450		51		5.2	3.1		31
Mean	1309	329	457	269	106	1.9	35.8	Mean
Runoff In Acre-Feet	80480	19800	28110	15980	6520	117	2130	Runoff In Acre-Feet



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
PIT RIVER
BIG VALLEY WATERMASTER SERVICE AREA

Burney Creek Watermaster Service Area

The Burney Creek service area is located in Shasta County near the town of Burney. There are 11 water right owners in the area with total allotments of 33.09 cubic feet per second. The source of water supply for this service area is Burney Creek, which enters the southern part of the service area and flows through Burney in a northerly direction to the Pit River. The portion of the valley served by this stream is approximately 11 miles long and two miles wide, and extends both north and south of Burney. The service area is at approximately 3,200 feet elevation.

A schematic drawing of the Burney Creek stream system is presented as Figure 4, page 21.

Water Supply

The water supply for Burney Creek comes from springs and snowmelt. Most of the watershed lies between the elevations of 4,000 and 7,500 feet on the northeast slopes of Burney Mountain. The creek normally has sufficient water to supply all demands until about the middle of June. The supply then gradually decreases until the end of July. For the remainder of the irrigation season runoff from perennial springs keeps the flow nearly constant at approximately 40 percent of allotments.

The daily mean discharge of Burney Creek near Burney is presented in Table 8. The stream gaging station on Burney Creek is located below four points of diversion; consequently, the records do not show all of the available water supply of the creek.

Method of Distribution

The Burney Creek decree (see Table 1) sets forth a rotation schedule of distribution. The water users, however, have found it more beneficial to irrigate on a continuous-flow basis (one priority class plus surplus allotments), which is now normal practice. The water allotted to the Greer-Cornaz Ditch is distributed in accordance with supplemental court decrees.

Water is diverted from Burney Creek, in most cases by means of low diversion dams, into ditches which convey it to the place of use. Lateral ditches are then used to irrigate the land.

1970 Distribution

Watermaster service began June 1 in the Burney Creek service area and continued until September 30. Kenneth E. Morgan, Water Resources Engineering Associate, was watermaster during this period.

All allotments were distributed on a continuous-flow basis. This practice, rather than that of rotation as called for in the decree, has been used for many years by agreement of the water right owners.

The Pierpont Ranch, lowest downstream decreed user on Burney Creek, chose not to irrigate during the 1970 season. Therefore, except for stockwater allotments delivered to the ranch, its irrigation water rights were apportioned among the other users on the creek.

The available water supply for the 1970 irrigation season was above normal. Surplus flow was available to all users until early July. All diversions were then regulated to 100 percent of first priority allotments. The supply gradually decreased to about 75 percent of first priority allotments during mid-August.

Inflow from the many springs tributary to Burney Creek served to maintain

this level for the remainder of the season.

The Haynes Ranch and the Scott Lumber Company were purchased this year by the Publishers Forest Products Company. Water to the mill pond was furnished through Diversion No. 1 and the mill pond was not used this year.

Special Occurrences

The Greer-Cornaz ditch was cleaned from Diversion 8 to the county road.

Plans for construction during the 1970 season include two headgates and concrete headwall at the head of the ditch for the Greer-Cornaz diversion structure and replacement of the headgate and diversion dam at Publishers Forest Products Diversion No. 1.

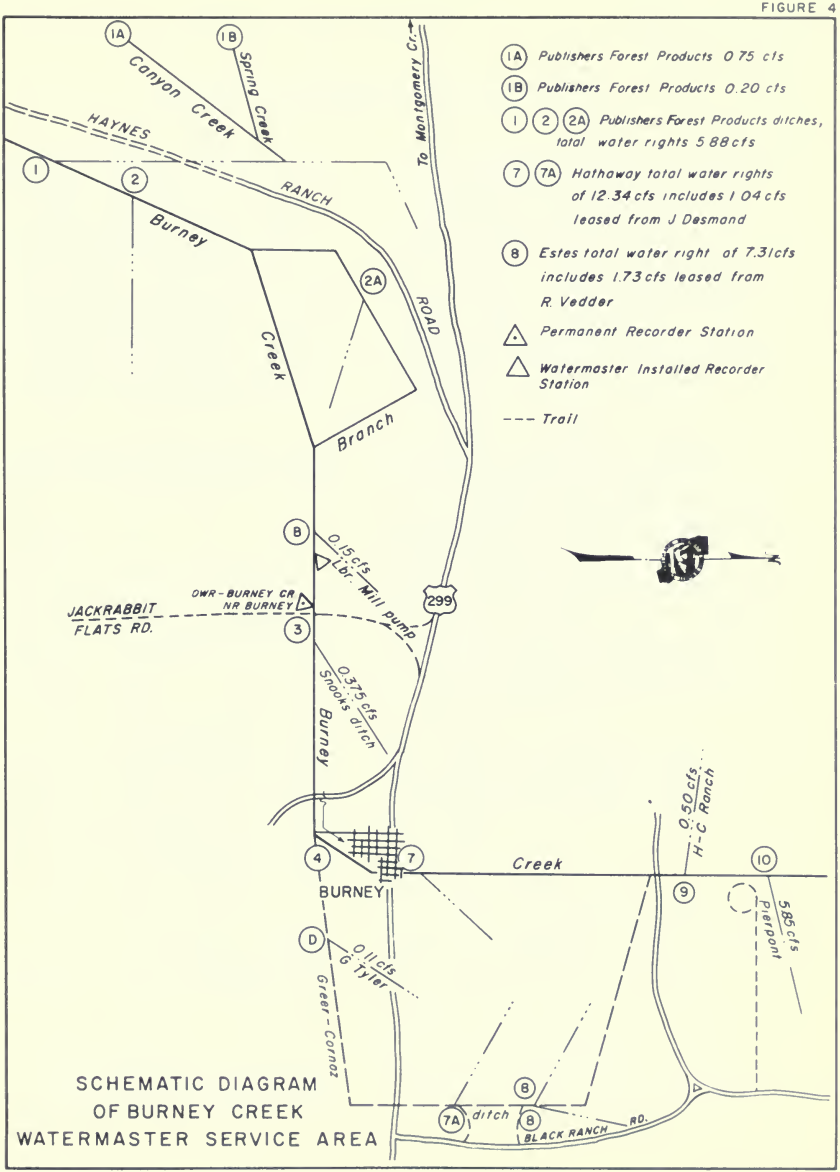
BURNEY CREEK WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 8

BURNEY CREEK NEAR BURNEY

Day	March	April	May	June	July	August	September	Day
1	263	84	67	13	3.7	6.4	14	1
2	216	82	55	12	3.7	11	15	2
3	190	79	45	11	3.7	16	14	3
4	167	78	45	8.0	3.7	15	13	4
5	178	75	44	7.5	3.7	16	11	5
6	174	74	42	6.0	3.7	17	11	6
7	202	75	44	9.7	3.7	29	12	7
8	342	70	43	11	3.7	26	12	8
9	253	65	57	13	3.7	27	11	9
10	215	61	52	23	3.7	25	9.1	10
11	185	61	47	14	3.7	24	8.6	11
12	173	58	48	14	3.7	23	10	12
13	171	58	48	35	3.7	23	10	13
14	182	57	44	77	3.8	21	10	14
15	171	54	42	54	3.8	22	10	15
16	159	56	39	39	6.5	21	10	16
17	139	53	39	29	11	20	9.3	17
18	120	40	39	25	12	20	10	18
19	123	65	34	23	15	19	19	19
20	117	61	33	21	18	18	17	20
21	114	55	30	28	15	17	14	21
22	110	50	26	28	13	17	8.1	22
23	106	46	23	25	18	17	8.1	23
24	105	46	21	20	15	17	9.6	24
25	102	44	20	28	14	16	12	25
26	100	57	19	32	14	17	13	26
27	94	69	16	35	13	15	16	27
28	92	63	15	45	12	15	18	28
29	91	56	15	7.0	12	15	15	29
30	86	64	15	3.7	11	14	11	30
31	86		14		10	14		31
Mean	157	61.9	36.0	23.3	8.5	16.7	12.0	Mean
Runoff In Acre-Feet	9630	3680	2220	1390	522	1150	716	Runoff In Acre-Feet



SCHEMATIC DIAGRAM
OF BURNEY CREEK
WATERMASTER SERVICE AREA

Butte Creek Watermaster Service Area

The Butte Creek service area is located in Butte County southeast of the City of Chico. There are 33 water right owners in the area with total allotments of 422.30 cubic feet per second. Butte Creek is the major source of water supply. The watermaster service area extends for about 11 miles along Butte Creek, commencing approximately 4 miles east of Chico and extending downstream to the crossing of Western Canal. It contains about 20,000 acres of valley floor lands at an average elevation of 150 feet.

A schematic drawing of the Butte Creek stream system is presented as Figure 5, page 27.

Water Supply

Butte Creek, above the watermaster service area, drains approximately 150 square miles of the western slope of the Sierra Nevada Mountains in the northeasterly portion of Butte County. The maximum elevation in the watershed is about 7,000 feet.

Snowmelt normally produces sustained high flows in the creek until about the end of June, after which perennial springs continue to produce flows of more than 40 cubic feet per second. Additional water is imported for distribution from the West Branch Feather River by means of the Hendricks (Toad Town) Canal through De Sablo Reservoir and Powerhouse into Butte Creek.

Records of the daily mean discharge at stream gaging stations in the Butte Creek service area are presented in Tables 9, 10, 11, pages 24 and 25.

Method of Distribution

Water is diverted from Butte Creek by pumping and by gravity diversions. Parrott Investment Company, M & T Incorporated, Dayton Mutual Water Company, and Durham Mutual Water Company divert relatively large amounts of water by gravity into ditches leading to their individual distribution systems. Various methods of irrigation are in general practice. These include contour checks, strip or border checks, basin checks, furrows, wild flooding, and sprinklers. The use of sprinklers has increased in popularity within the past few years, especially for use on orchards.

Water diverted to Butte Creek from the West Branch Feather River through the Hendricks Canal and De Sabla Powerhouse at times causes wide fluctuation in the Battle Creek flow. In accordance with "Memorandum and Order" entered May 10, 1949, by the Superior Court of Butte County, water users below Parrott Dam (where the imported water is rediverted) must be provided their natural flow allotments at all times without undue fluctuation caused by intermittent presence of imported water. For the past several years PG&E has maintained reasonably steady releases.

The Butte Creek decree (See Table 1) established three priority classes for summer distribution purposes and, in addition, defined two surplus flow allotments.

1970 Distribution

Watermaster service began April 21 in the Butte Creek service area and continued until September 30. Ross P. Rogers, Water Resources Engineering Associate, was watermaster during this period.

Despite a relatively dry spring, the available water supply for the 1970 season was above normal. A few late storms added to the snowpack in the mountains, thus extending for several

weeks the snowmelt runoff which suplies the surplus water rights allotments.

As the streamflow decreased steadily during late spring, the lower priority allotments, including several recently acquired permit rights, were shut off. By July 1, only the two highest priority surplus allotments were receiving surplus water. This occurs usually in wet years only.

By August 1, the surplus allotment of the Gorrill Land Company, highest priority in this group, was shut off for the season. Streamflow continued to recede slowly until about mid-August. Thereafter, it remained nearly constant.

Although the flows were low in August and September, all demands of the first priority users were satisfied. Because several water right owners did not irrigate this season and the almond growers reduced sharply their requirements in early August, no serious shortage occurred. Second and third priority water was available in varying amounts throughout this period.

Special Occurrences

Watermaster service was expanded in 1970 to include several permit rights recently granted by the State Water Resources Control Board. Consequently, service began about a month earlier than usual.

Two concrete Parshall measuring flumes constructed during the spring are: a 10-foot flume in Edgar Slough near Crouch Avenue, and an 8-foot flume in the Parrott Investment Company's lateral from Edgar Slough.

During the fall of 1970, a Sparling-type flow meter will be installed at the Newhall Land and Farming Company and Gorrill Land Company diversion points.

BUTTE CREEK WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 9

BUTTE CREEK NEAR CHICO

Day	March	April	May	June	July	August	September	Day
1	2570	444	310	269	191	138	125	1
2	1550	438	310	269	177	137	124	2
3	1150	424	310	261	174	136	126	3
4	1100	414	320	257	167	135	133	4
5	1010	400	325	253	161	135	139	5
6	911	397	322	261	155	134	137	6
7	865	406	318	253	155	134	136	7
8	1190	408	318	249	155	134	135	8
9	1020	402	327	269	152	132	133	9
10	957	401	362	281	155	131	132	10
11	880	412	348	281	149	130	129	11
12	816	393	334	257	152	128	129	12
13	772	405	329	253	150	130	130	13
14	753	420	316	265	150	132	132	14
15	730	406	314	265	149	130	128	15
16	701	393	316	253	147	130	132	16
17	679	389	324	245	147	131	130	17
18	640	379	328	229	146	132	131	18
19	617	383	330	221	143	131	133	19
20	596	372	311	205	141	130	135	20
21	579	354	309	205	143	129	135	21
22	564	353	317	198	142	124	134	22
23	551	346	318	191	141	122	136	23
24	538	340	306	191	139	122	136	24
25	530	335	302	188	138	122	133	25
26	518	341	303	180	137	125	134	26
27	504	348	294	184	143	125	134	27
28	496	338	290	202	148	128	134	28
29	489	330	285	257	138	126	133	29
30	480	318	277	205	140	126	133	30
31	465		270		138	128		31
Mean	814	393	314	237	150	130	132	Mean
Runoff In Acre-Feet	50030	22790	19330	14080	9250	7980	7880	Runoff In Acre-Feet

BUTTE CREEK WATERMASTER SERVICE AREA

1970 Daily Mean Discharge In Cubic Feet Per Second

TABLE 10

BUTTE CREEK NEAR DURHAM

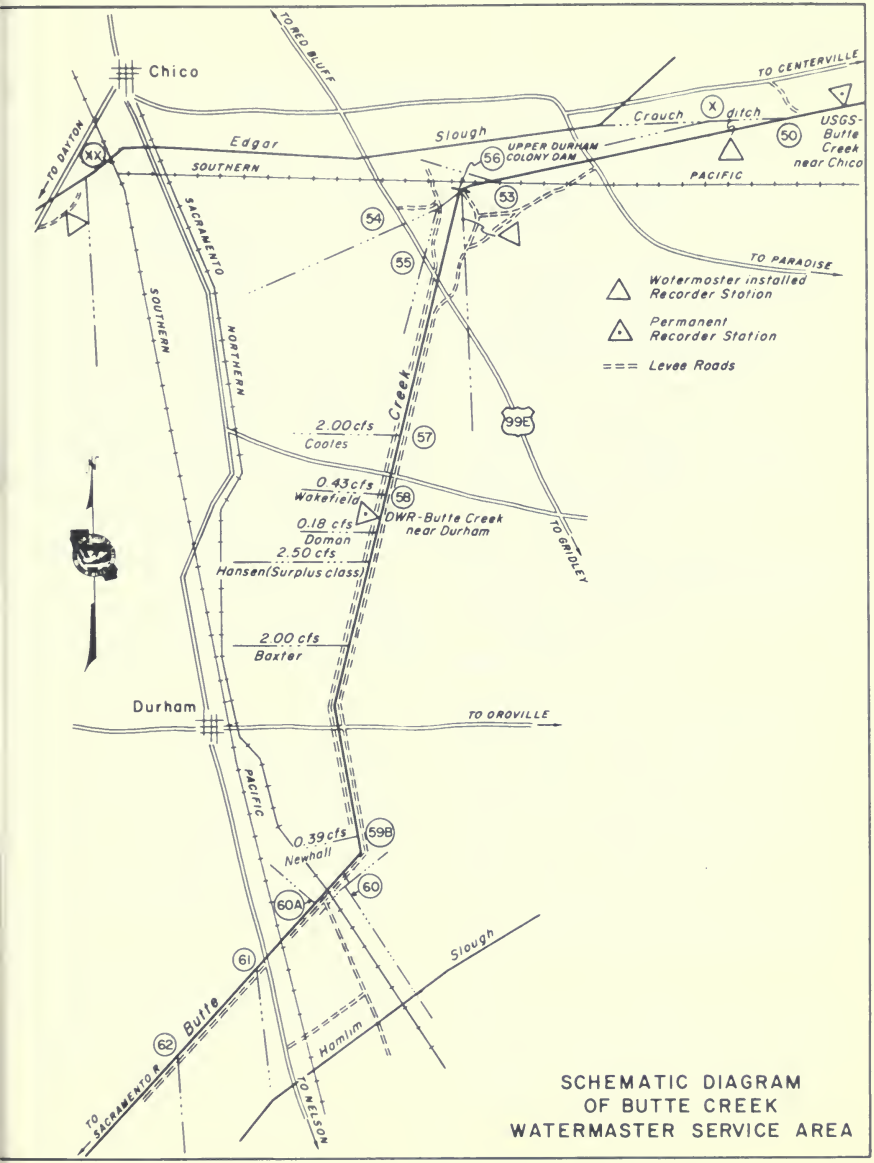
Day	March	April	May	June	July	August	September	Day
1	2500	408	96	54	18	5.9	15	1
2	1530	400	91	50	12	5.5	22	2
3	1120	384	86	48	10	4.3	20	3
4	1110	375	91	73	9.4	4.2	24	4
5	1010	362	109	77	11	5.0	38	5
6	883	356	145	77	18	7.3	34	6
7	828	368	162	75	38	5.7	25	7
8	1150	372	168	70	35	12	18	8
9	989	365	181	81	36	12	18	9
10	922	362	211	86	30	8.0	16	10
11	840	363	218	80	31	6.2	15	11
12	776	343	219	68	30	5.2	15	12
13	727	380	213	64	24	8.1	18	13
14	707	357	199	67	29	9.2	44	14
15	679	249	179	62	17	11	50	15
16	651	302	161	56	15	10	50	16
17	629	254	158	50	14	10	86	17
18	593	237	163	43	20	13	68	18
19	573	219	170	39	17	17	70	19
20	559	203	159	33	12	17	70	20
21	538	167	152	26	8.0	17	67	21
22	518	143	145	18	11	21	68	22
23	509	136	141	14	12	21	68	23
24	491	127	134	21	14	14	68	24
25	491	121	121	24	8.4	11	67	25
26	491	142	117	20	7.9	5.8	68	26
27	475	153	110	18	13	6.0	68	27
28	467	125	101	23	17	8.0	69	28
29	456	100	91	38	14	8.4	71	29
30	439	95	82	23	7.9	9.7	70	30
31	422		73		5.7	9.8		31
Mean	777	265	143	48.3	17.5	10.0	46.0	Mean
Runoff In Acre-Feet	47750	15760	8820	2930	1080	612	2740	Runoff In Acre-Feet

TABLE 11

TOADTOWN CANAL ABOVE BUTTE CANAL

Day	March	April	May	June	July	August	September	Day
1	128	115	114	58	114	63	53	1
2	127	109	114	62	114	60	51	2
3	124	106	113	61	114	60	56	3
4	124	104	115	61	112	60	63	4
5	123	103	113	55	115	59	64	5
6	124	112	111	61	114	58	63	6
7	124	121	112	55	114	59	63	7
8	125	121	113	61	114	59	63	8
9	124	116	113	61	114	57	62	9
10	123	120	110	63	115	56	61	10
11	122	120	112	63	113	56	59	11
12	122	119	117	61	110	55	58	12
13	120	115	116	61	107	59	59	13
14	119	109	114	61	112	58	60	14
15	121	107	114	60	109	58	59	15
16	124	112	113	59	106	58	59	16
17	123	110	114	59	102	60	58	17
18	121	110	117	58	97	60	60	18
19	119	118	117	59	89	59	61	19
20	117	115	117	58	83	58	61	20
21	115	112	117	57	83	55	61	21
22	114	113	117	56	81	51	63	22
23	118	116	116	69	79	48	63	23
24	124	118	115	68	77	50	63	24
25	124	119	114	60	74	53	63	25
26	124	121	114	60	73	53	63	26
27	124	122	114	60	74	53	63	27
28	124	118	114	62	81	55	63	28
29	124	115	112	115	83	55	62	29
30	121	114	63	115	74	54	61	30
31	118		60		69	54		31
Mean	122	114	111	64.6	87.3	56.6	60.6	Mean
Runoff In Acre-Feet	7510	6810	6810	3850	5980	3480	3810	Runoff In Acre-Feet

Diversion #	Water Right Owner	Amount in cfs	Remarks
Butte Creek			
50	M. & T. Incorporated	53.33	Imported water*
	M. & T. Incorporated	25.00	Surplus class
	Parrott Investment Company	53.33	Imported water*
	Parrott Investment Company	25.00	Surplus class
	Taylor	3.00	
X	Dayton Mutual Water Company	16.00	
XX	Dayton Mutual Water Company	3.33	Imported water*
	*Water imported by PG&E from West Branch Feather River via Hendricks Canal and released into Butte Creek, less 5% for conveyance losses.		
53	U. S. Department of Agriculture	2.00	
54	Patrick	3.33	
	Lavy	1.89	
	Smith	0.555	
	Towne and Jayred	1.115	
55	Camenzind Brothers	3.11	
56	Durham Mutual Water Company	44.70	
	Parrott Investment Company	2.00	
	Carlson	0.48	
	Bell	0.39	
	Domom Brothers	0.67	
	Logan	0.01	
	Vernoga	1.447	
	Konyn - Amerio	0.40	
	Bebich	0.446	
	Setka	0.447	
	Wheelock	0.26	
	Total	51.25	
60	Newhall Land & Farming Company	6.75	
	Newhall Land & Farming Company	21.25	Surplus class
60A	Phillips	0.66	
61	Gorrill Land Company	1.00	
	(see Hamlin Slough)	20.70	Surplus class
62	White	1.00	
		9.50	Surplus class
Hamlin Slough			
	Newhall Land & Farming Company	16.60	
	Gorrill Land Company	21.70	
	(Total diversions from Butte Creek and Hamlin Slough not to exceed 21.70 cfs).		



SCHEMATIC DIAGRAM
OF BUTTE CREEK
WATERMASTER SERVICE AREA

Cow Creek Watermaster Service Area

The Cow Creek service area is located in Shasta County in the foothills east of Redding. There are 90 water right owners in the area with total allotments of 56.367 cubic feet per second. The major streams in this area are: North Cow Creek (commonly called Little Cow Creek), Cedar Creek (a tributary to North Cow), Oak Run Creek, and Clover Creek. These creeks, which are all tributaries of Cow Creek, flow in a westerly or southwesterly direction through narrow valleys joining Cow Creek near the town of Palo Cedro. The service area is located in the narrow valleys along the several creeks and consists of small parcels separated by brush-covered hills in the lower elevations. There are dense coniferous forests in the higher regions. The entire area is about 25 miles long by 10 miles wide and varies in elevation between about 500 and 4,000 feet.

A schematic drawing of each major stream system in the Cow Creek service area is presented as Figures 6 through 6c, pages 32 through 35.

Water Supply

Water supply for this service area is derived mostly from springs and seepage, with some early snowmelt runoff. A considerable portion of the watershed consists primarily of low brushy hills which do not accumulate a heavy snowpack. Relatively large amounts of precipitation during the winter normally produce substantial springs and seepage that flow throughout the irrigation season.

Cedar Creek flow is usually sufficient to supply all allotments until about July 15. Thereafter, it steadily decreases throughout the remainder of the season.

The flow of North Cow Creek in average years is adequate to supply nearly 100 percent of all allotments. In dry years it is necessary to reduce allotments up to 50 percent during the latter part of the summer.

The flow of Oak Run Creek is augmented by a first priority allotment of five cubic feet per second of imported water from the North Cow Creek watershed. The combined flow is generally adequate to supply all allotments throughout the season.

Clover Creek produces enough water to meet nearly all allotments throughout the season. In dry years, diversions may be reduced to about 70 percent of decreed allotments.

Records of the daily mean discharge of North Cow Creek near Ingot are presented in Table 12. Numerous additional gaging stations were maintained in various diversion ditches.

Method of Distribution

Water in the Cow Creek service area is used for domestic and stockwatering purposes and for irrigation of meadow hay, alfalfa, small orchards, and vegetable gardens. The alfalfa and hay lands are irrigated primarily by wild flooding, although some sprinklers are used. Furrows are used for irrigating gardens, and basins or checks and sprinklers are used for orchards. Much of the water applied is lost by surface runoff or by deep percolation, some of which returns to the creeks and thereby becomes available for rediversion downstream.

Only one priority allotment was provided in each of the Cow Creek service area decrees (see Table 1) except for the Oak Run Creek decree which contains a surplus allotment.

1970 Distribution

Watermaster service began June 1 in the Cow Creek service area and continued until September 30. Kenneth Morgan, Water Resources Engineering Associate, was watermaster during this period.

The available water supply for the Cow Creek service area was normal until mid-July. It was below normal for North Cow Creek and Clover Creek from mid-July through September. The available water supply was above average throughout the season for Oak Run Creek.

Cedar Creek. Cedar Creek consistently has the lowest ratio of water supply to water rights in the Cow Creek service area. However, during 1970 some water right owners chose not to use their allotments. Consequently, those using water received a reasonable supply throughout the summer.

North Cow Creek. There was a surplus flow of water in North Cow Creek until about the third week in July. There was then sufficient water available to supply about 95 percent of allotments until early August. The flow gradually decreased to about 70 percent at the end of August and continued at 70 percent through September.

Oak Run Creek. Oak Run Creek historically provides the best supply of water in the Cow Creek service area. The springs at its headwaters are not as severely affected in drought periods as those of neighboring streams. The available water supply in Oak Run Creek was sufficient to supply surplus flows to most water users throughout the season.

Clover Creek. The available supply on Clover Creek was below average during most of the irrigation season. Excessive evaporation and conveyance losses occurred in the 20-mile length of canyon between the upper users near Oak Run and the lower users near Millville.

Surplus water was available until early July. From that time on, the supply receded gradually. It was able to serve about 90 percent of allotments during the middle and latter part of July, decreased to about 80 percent in early August, and then leveled off at about 75 percent for the remainder of the season.

COW CREEK WATERMASTER SERVICE AREA

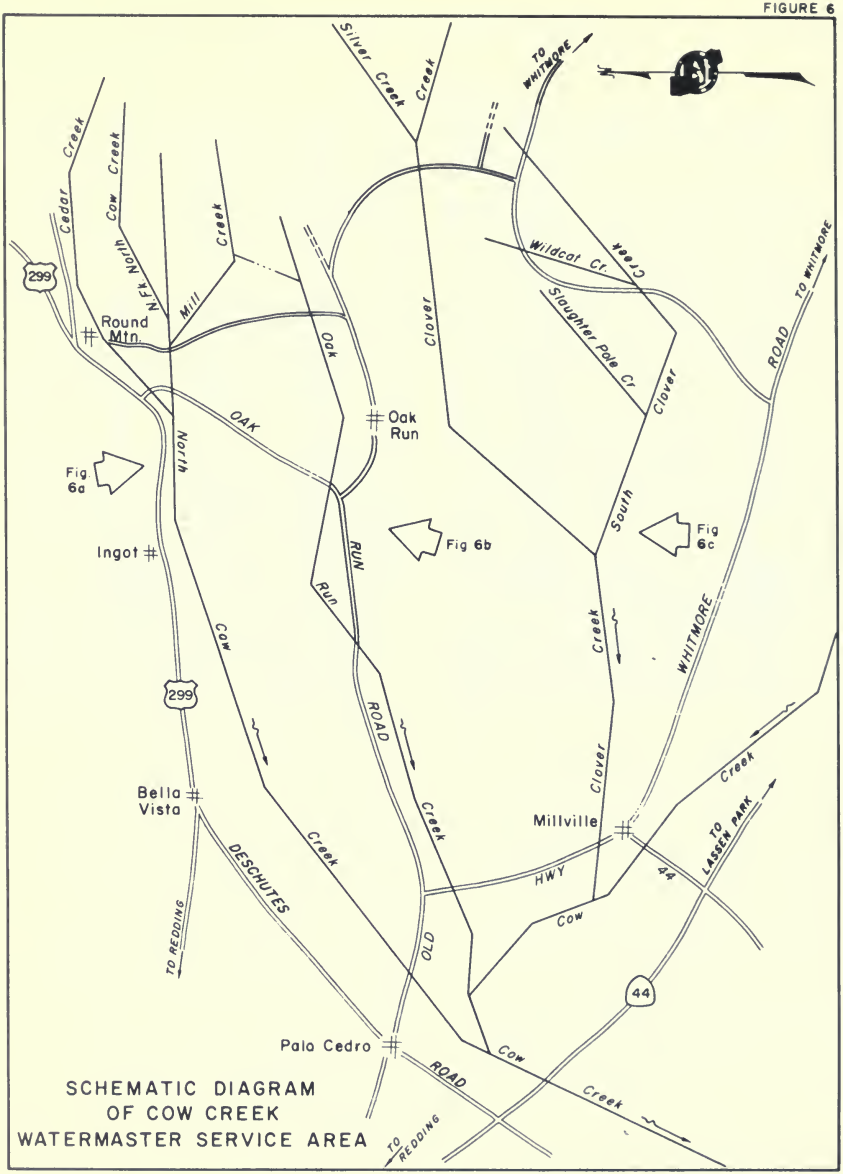
1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 12

NORTH COW CREEK NEAR INGOT

Day	March	April	May	June	July	August	September	Day
1			45*	27	19	9.8	6.8	1
2			44	26	17	9.8	6.8	2
3			44	26	17	9.8	7.4	3
4			44	26	17	9.2	8.0	4
5			45	25	17	8.6	8.0	5
6			45	24	18	8.0	8.6	6
7			45	22	15	9.2	7.4	7
8			46	22**	14	7.4	7.4	8
9			51		14	6.2	7.4	9
10			48		14	6.2	8.8	10
11			48		14	6.8	6.8	11
12			48		11	6.2	6.2	12
13			46		12	6.2	8.2	13
14			44		11	6.2	8.2	14
15			42	30*	11	6.2	8.2	15
16			42	28	10	6.2	6.8	16
17			42	27	12	6.2	6.8	17
18			42	24	11	6.8	7.4	18
19			41	22	11	6.8	9.2	19
20			43	20	10	6.8	8.6	20
21			39	20	10	6.8	7.4	21
22			37	18	9.8	6.8	7.4	22
23			35	17	9.8	6.8	7.4	23
24			35	18	9.2	6.8	6.8	24
25			34	17	9.8	6.8	6.8	25
26			32	17	9.8	6.8	7.4	26
27			32	19	9.2	6.8	7.4	27
28			32	27	8.0	6.8	7.4	28
29			30	27	9.2	6.2	7.4	29
30			29	20	9.8	8.2	8.0	30
31			28		9.8	6.8		31
Mean			40.6		12.2	7.2	7.3	Mean
Runoff In Acre-Feet			250		749	441	433	Runoff In Acre-Feet

* Beginning of Record
** End of Record



SCHEMATIC DIAGRAM
OF COW CREEK
WATERMASTER SERVICE AREA

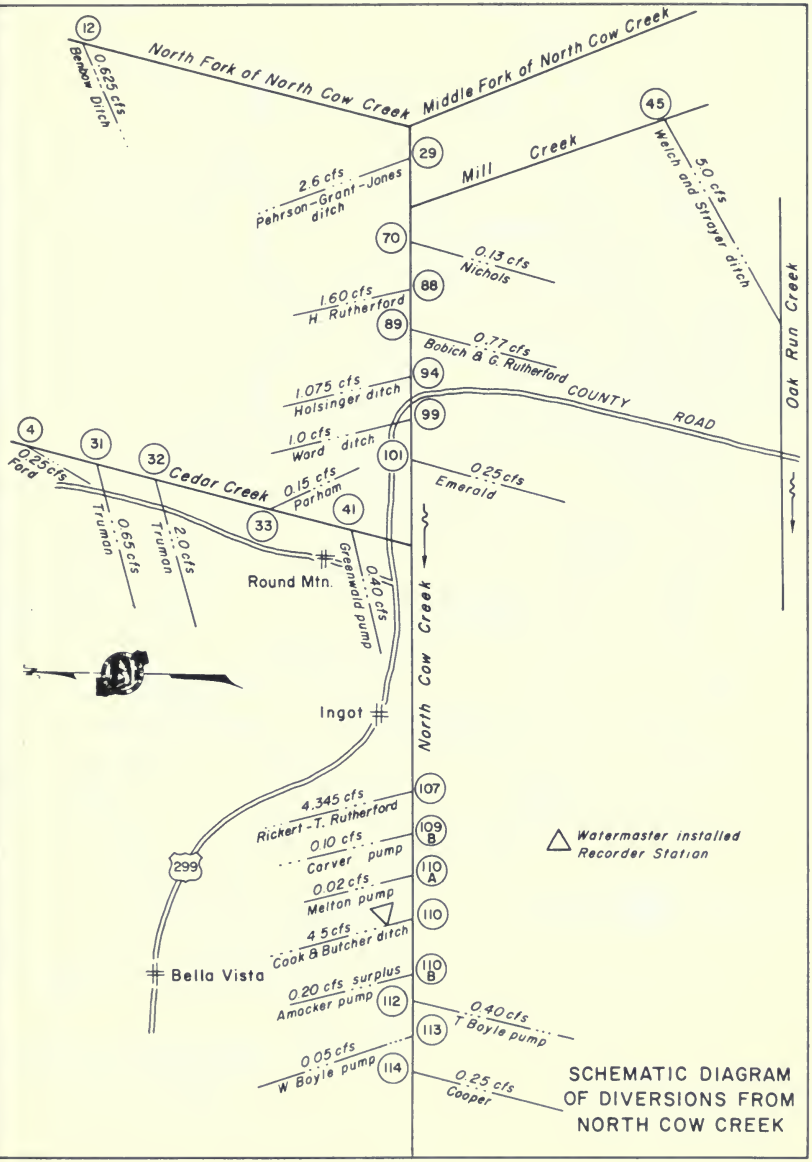
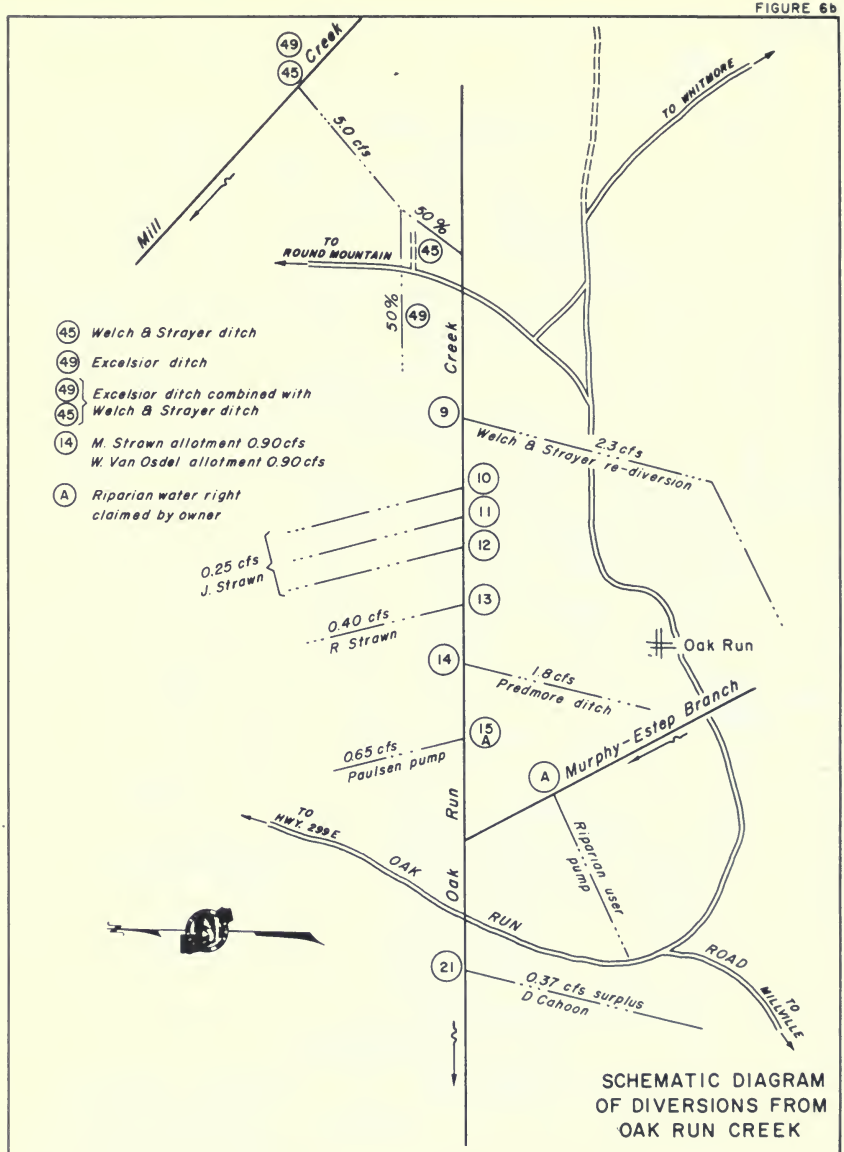
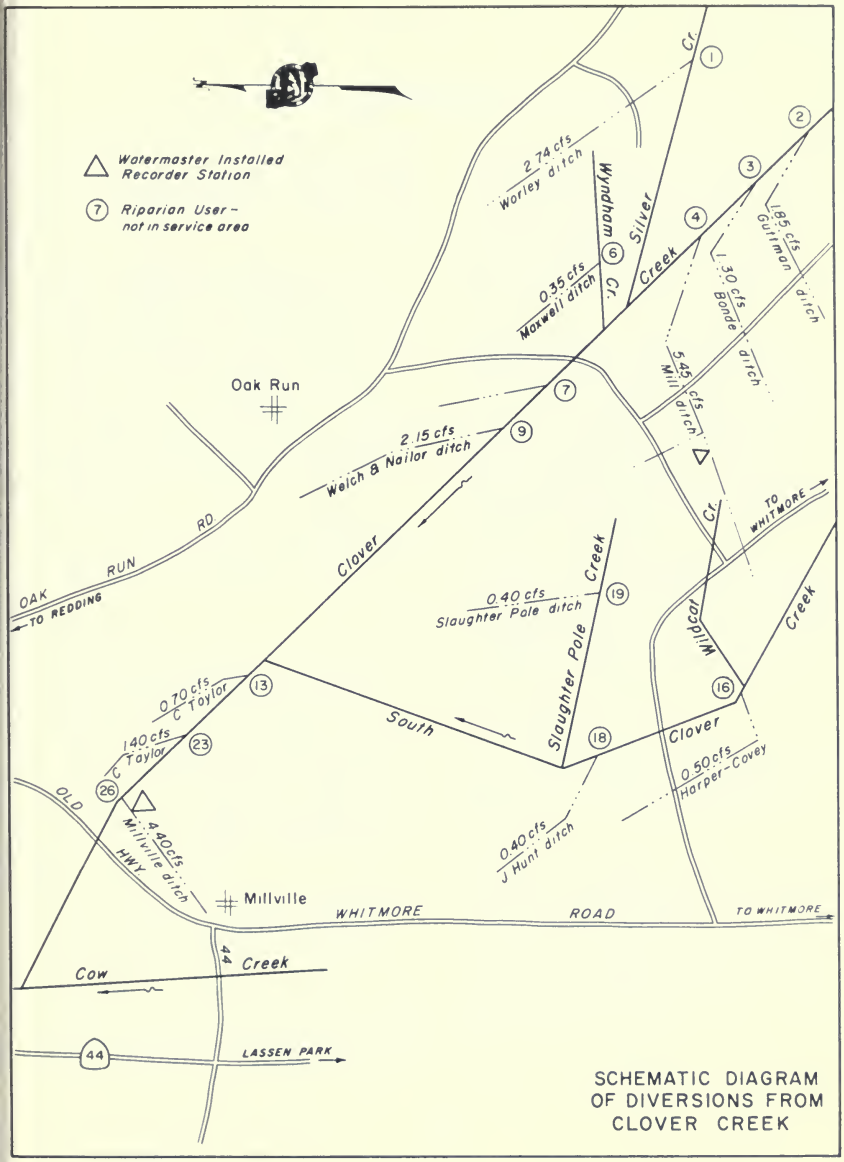

12
North Fork of North Cow Creek
Middle Fork of North Cow Creek
0.625 cfs
Benbow Ditch
45
29
Mill Creek
2.6 cfs
Pehrson-Grant-Jones ditch
Welch and Strayer ditch
5.0 cfs
70
0.13 cfs
Nichols
Oak Run Creek
88
1.60 cfs
H. Rutherford
89
0.77 cfs
Bobich & G. Rutherford
94
1.075 cfs
Holsinger ditch
COUNTY ROAD
99
1.0 cfs
Ward ditch
4
31
32
Cedar Creek
0.25 cfs
Ford
101
0.25 cfs
Emerald
0.15 cfs
Parham
41
33
Truman
0.65 cfs
Truman
2.0 cfs
Greenwald pump
0.40 cfs
Round Mtn.
North Cow Creek
Ingot
107
4.345 cfs
Rickert-T. Rutherford
109 B
0.10 cfs
Carver pump
299
110 A
0.02 cfs
Melton pump
110
4.5 cfs
Cook & Butcher ditch
Bella Vista
110 B
0.20 cfs surplus
Amacker pump
112
0.40 cfs
T. Boyle pump
113
0.05 cfs
W. Boyle pump
114
0.25 cfs
Cooper
Watermaster installed Recorder Station
SCHEMATIC DIAGRAM OF DIVERSIONS FROM NORTH COW CREEK

FIGURE 6b



SCHEMATIC DIAGRAM OF DIVERSIONS FROM OAK RUN CREEK

FIGURE 6c



SCHEMATIC DIAGRAM OF DIVERSIONS FROM CLOVER CREEK

Digger Creek Watermaster Service Area

The Digger Creek service area is located in southeastern Shasta County and northeastern Tehama County. There are 38 water right owners in the area with total allotments of 23.225 cubic feet per second.

Digger Creek forms a portion of the boundary line between Shasta and Tehama Counties. It drains an area of approximately 45 square miles on the western slopes of mountains situated immediately west of Lassen National Park. The creek flows in a westerly direction through the town of Manton to its confluence with North Fork Battle Creek. Manton, the only community in the area, is located approximately 40 miles northeast of Red Bluff.

A schematic drawing of the Digger Creek stream system is presented as Figure 7, page 39.

Water Supply

Precipitation, occurring principally in the winter months, is typical of Northern California foothill areas. Snowmelt contributes to the early runoff but the summer streamflow is primarily from springs. In average runoff years there is sufficient flow in Digger Creek, with careful regulation, to satisfy all decreed allotments throughout the entire irrigation season. However, serious deficiencies occur in dry years.

The estimated daily mean discharge of Digger Creek below South Fork Branch is presented in Table 13, page 38.

Method of Distribution

There are four court decrees (see Table 1) on Digger Creek. These decrees, in effect, have divided the water rights on the creek into two groups, the upper users and the lower users. The three upper users irrigate lands adjoining the stream so that all water not consumptively used returns to Digger Creek. The lower users are located within a five-square-mile area. Very little runoff from the lower users returns to the creek.

The three upper users' water rights are absolute and not correlative to the lower users; therefore, allotments are not cut proportionally as Digger Creek flows decrease. Since the lower users have to stand all deficiencies, their allotments are cut proportionally as the flow decreases. In effect, the upper users have first priority allotments and the lower users have second priority allotments.

Irrigation is accomplished principally by wild flooding, although border checks and sprinklers are used on a few fields. Small diversion dams are placed in the stream channel to divert water into ditches for conveyance to the fields.

1970 Distribution

Watermaster service began in the Digger Creek service area on July 1 and continued until September 30. Kenneth E. Morgan, Water Resources Engineering Associate, was watermaster during this period.

The available water supply in Digger Creek was outstanding. During the usually critical months of August and September, all water users received 100 percent or more of their allotments. In addition, surplus quantities ranging from 5 to 20 percent of the total adjudicated water rights flowed unused from the service area.

DIGGER CREEK WATERMASTER SERVICE AREA

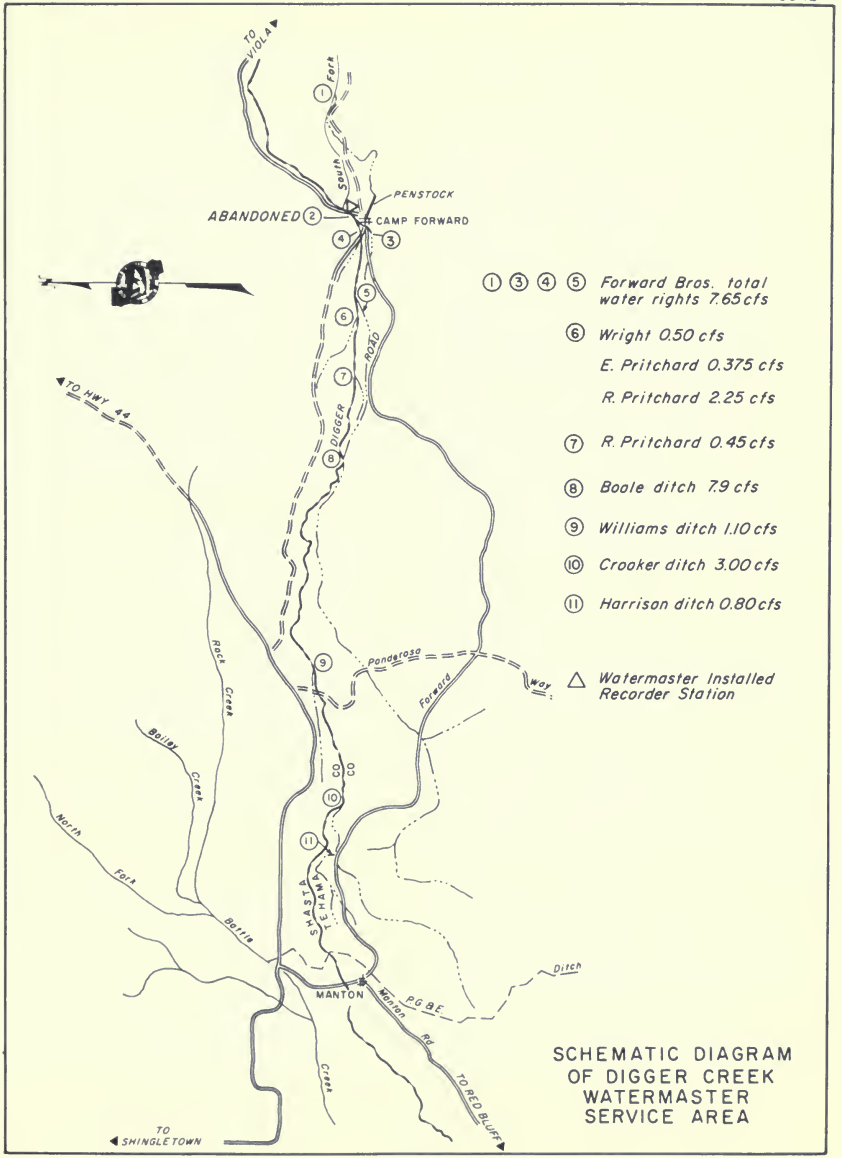
1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 13

DIGGER CREEK BELOW SOUTH FORK BRANCH

Day	March	April	May	June	July	August	September	Day
1							18	1
2							18	2
3							18	3
4							18	4
5							18	5
6							18	6
7							18	7
8							18	8
9							17	9
10							17	10
11							17	11
12							16	12
13							16	13
14							17	14
15							17	15
16							17	16
17							16	17
18							16	18
19							17	19
20							16	20
21							16	21
22							16	22
23							16	23
24							15	24
25							15	25
26							15	26
27							15	27
28							15	28
29						19*	15	29
30						19	15	30
31						18		31
Mean						18.7	16.5	Mean
Runoff In Acre-Feet						111	984	Runoff In Acre-Feet

*Beginning of Record



SCHEMATIC DIAGRAM
OF DIGGER CREEK
WATERMASTER
SERVICE AREA

French Creek Watermaster Service Area

The French Creek service area is located in western Siskiyou County near the town of Etna in Scott Valley. There are 27 water right owners in the service area with total allotments of 30.59 cubic feet per second. The major sources of water supply are French Creek, Miners Creek, and North Fork French Creek. French Creek flows in a northeasterly direction through the central part of the service area. Miners Creek begins east of the headwaters of French Creek and flows in a northerly direction, joining French Creek about 3 miles above its confluence with Scott River. North Fork French Creek begins north of the headwaters of French Creek and flows easterly, joining French Creek one mile upstream from the confluence with Miners Creek.

The service area encompasses the entire agricultural area within the French Creek Basin, and some additional lands along the west side of the Scott River near the town of Etna. The service area is about one-half mile wide and five miles long, with the main axis and drainage running from south to north. Elevations of the agricultural area range from about 3,200 feet at the south to about 2,800 feet at the confluence of French Creek and Scott River.

A schematic drawing of the French Creek stream system is presented as Figure 8, page 43.

Water Supply

The water supply is derived from snowmelt runoff, springs and seepage, and occasional summer thundershowers.

The watershed of French Creek contains about 32 square miles of heavily forested, steep, mountainous terrain of the easterly slopes of the Salmon Mountains. It varies in elevation from about 7,200 feet along its west rim to about 3,200 feet at the foot of the slopes bordering French Creek Valley. Snowmelt runoff is normally sufficient to supply all demands until about the middle of July. The daily mean discharge of Duck Lake Creek, a tributary, is presented in Table 14, page 42.

Method of Distribution

Irrigation is accomplished primarily by wild flooding of permanent pasture and alfalfa fields. Water is conveyed by ditches and laterals to the place of use.

The French Creek decree (see Table 1) provides three separate areas of distribution within the service area and establishes the following number of priority classes for these areas: French Creek, including Horse Range Creek, Paynes Lake Creek, and Duck Lake Creek - seven; Miners Creek - three; North Fork French Creek - three.

1970 Distribution

Watermaster service began in the French Creek service area on July 1 and continued until September 30. John A. Nolan, Water Resources Technician II, was watermaster during this period.

Because watermaster service was initiated during the 1969 season, there is little data available for a water supply comparison with past years. However, it is the opinion of most ranchers in the area that water year conditions were about average.

Upstream third priority allotments were shut off on July 27 to satisfy the upstream second priority rights. However, downstream third priority allotments were available throughout the remainder of the season in decreasing quantities.

Downstream first, second, and third priority allotments can rely on a more

dependable water supply than those of the upper users due to inflow from Paynes Creek, Horse Range Creek, and North Fork French Creek, all tributaries to French Creek below the upper users.

FRENCH CREEK WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

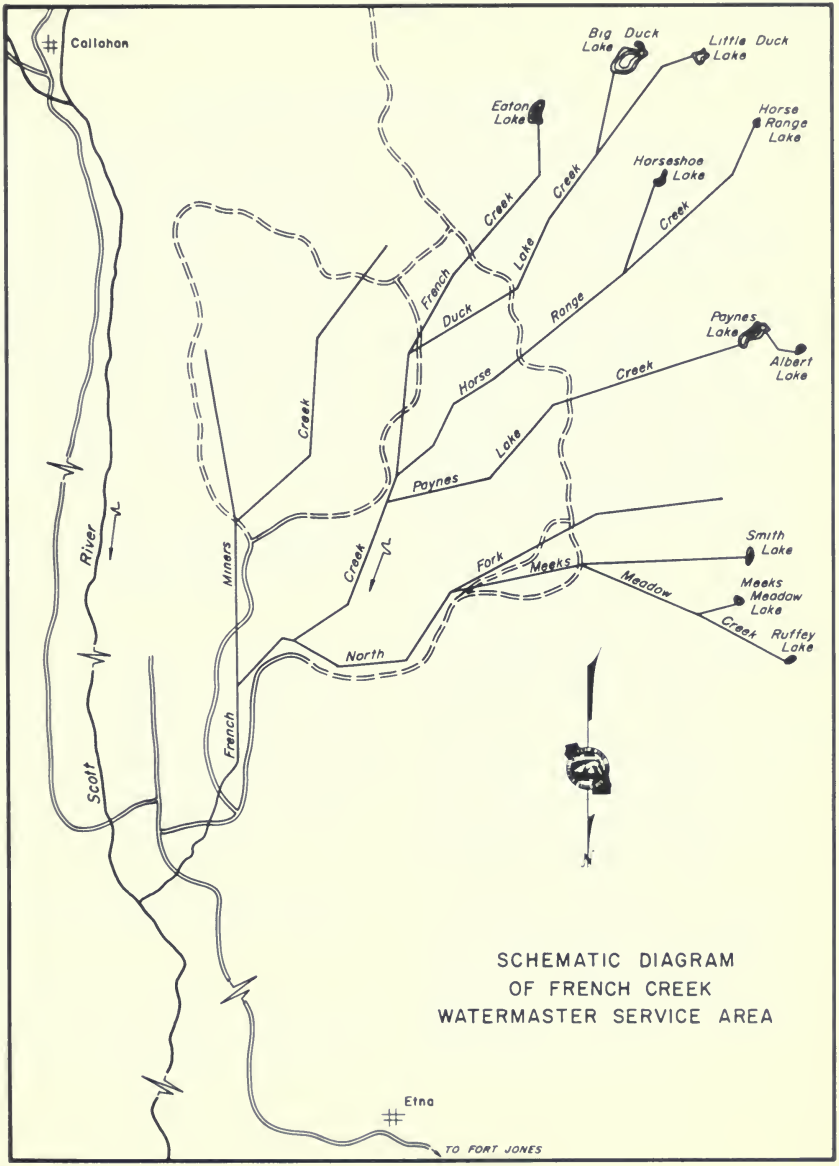
TABLE 14

DUCK LAKE CREEK TRIBUTARY TO FRENCH CREEK

Day	March	April	May	June	July	August	September	Day
1			6.5*	17	5.9	2.0	1.2	1
2			7.5	18	4.7	2.0	1.2	2
3			10	19	4.0	2.0	1.1	3
4			14	18	3.8	2.0	1.1	4
5			14	19	3.5	1.8	1.1	5
6			13	18	3.5	1.8	1.1	6
7			11	17	3.2	1.8	1.0	7
8			14	17	3.1	1.8	1.0	8
9			15	16	3.1	1.8	0.9	9
10			13	15	2.8	1.7	0.9	10
11			12	14	2.8	1.7	0.9	11
12			12	13	2.6	1.7	0.9	12
13			10	12	2.4	1.7	0.9	13
14			12	14	2.3	1.7	0.9	14
15			14	11	2.3	1.7	0.9	15
16			18	11	2.2	1.6	0.9	16
17			24	10	2.3	1.6	0.9	17
18			24	10	2.3	1.6	0.9	18
19			20	9.8	2.3	1.6	0.9	19
20			19	9.8	2.2	1.4	0.9	20
21			18	9.6	2.2	1.4	0.9	21
22			19	9.3	2.0	1.4	0.9	22
23			19	8.8	2.0	1.4	0.9	23
24			18	8.3	2.0	1.4	0.9	24
25			19	8.0	2.0	1.2	0.9	25
26			20	7.2	2.0	1.2	0.9	26
27			20	7.0	2.0	1.2	0.9	27
28			18	8.3	2.2	1.2	0.8	28
29			17	7.3	2.2	1.2	0.8	29
30			17	6.2	2.2	1.2	0.8	30
31			16		2.2	1.2		31
Mean			15.6	12.4	2.7	1.6	0.9	Mean
Runoff In Acre-Feet			960	735	167	97	56	Runoff In Acre-Feet

* Beginning of Record

FIGURE 8


Callahan
Big Duck Lake
Little Duck Lake
Eaton Lake
Horse Range Lake
Horseshoe Lake
Creek
Creek
Creek
Lake
French
Duck
Range
Paynes Lake
Albert Lake
Horse
Creek
Paynes
Lake
Creek
Miners
Creek
River
Smith Lake
Fork
Meeks
Meadow
Meeks Meadow Lake
Creek
Rutfey Lake
North
French
Scott
SCHEMATIC DIAGRAM
OF FRENCH CREEK
WATERMASTER SERVICE AREA
Etna
TO FORT JONES

Hat Creek Watermaster Service Area

The Hat Creek service area is located in the eastern part of Shasta County north of Lassen Volcanic National Park. There are 48 water right owners in the area with total allotments of 135.545 cubic feet per second. Hat Creek, which flows in a northerly direction through the area, is the only source of water supply in the service area. The place of use is Hat Creek Valley, which is approximately 20 miles long and two miles wide. The valley extends northward from a point about three miles south of the town of Old Station, to the confluence of Rising River and Hat Creek. The irrigable lands, which consist primarily of volcanic ash, are interlaced with large outcroppings of volcanic rock.

Schematic drawings for both the upper and lower users' diversion systems from Hat Creek are presented as Figures 9 through 9b, pages 47 through 49.

Water Supply

The water supply of Hat Creek is derived from snowmelt runoff on Mount Lassen and from large springs. Snowmelt normally creates a high flow during May and June; however, the substantial portion of supply during the summer months comes from large springs which decrease only slightly in output. Only after a series of dry years does the flow of these springs fall much below 75 percent of total allotments.

A record of the daily mean discharge of Hat Creek near the town of Hat Creek is presented in Table 15, page 46.

Method of Distribution

The Hat Creek decree (see Table 1) divides the water rights on Hat Creek into two groups (upper users and lower users) who use the water on 10-day rotation schedules, with one priority class for each group as the basis for distribution. Therefore, a complete reregulation of all diversions occurs every 10 days, alternating an irrigation supply to one group and a minimum flow (stockwater) to the other group.

Most irrigation in the area is accomplished by wild flooding. Large heads of water are used to cover the land rapidly, thereby preventing excessive loss from percolation in the extremely porous soil. Diversion dams constructed across the creek serve to divert water into large ditches. The fields, many of which have checks and borders, are then flooded from the main diversion ditch or from laterals. A few domestic rights are met by pumping directly from Hat Creek.

1970 Distribution

Watermaster service began May 1 in the Hat Creek service area and continued until September 30. Virgil Buechler, Water Resources Technician II, was watermaster during this period.

The available water supply for Hat Creek was extremely good. The snowpack on Mt. Lassen was normal. The springs tributary to Hat Creek were flowing above normal. The high spring flows continued through the summer. The flow in Hat Creek near Old Station was in excess of 150 cfs throughout the summer.

The usual 10-day rotation schedule was not initiated until July 30. During this rotation, the lower users received 100 percent of their allotments (one priority). The flows in Hat Creek then remained between 150 to 160 cubic feet per second. This resulted in regulation every 10 days, but the flows were always on a 100 percent basis.

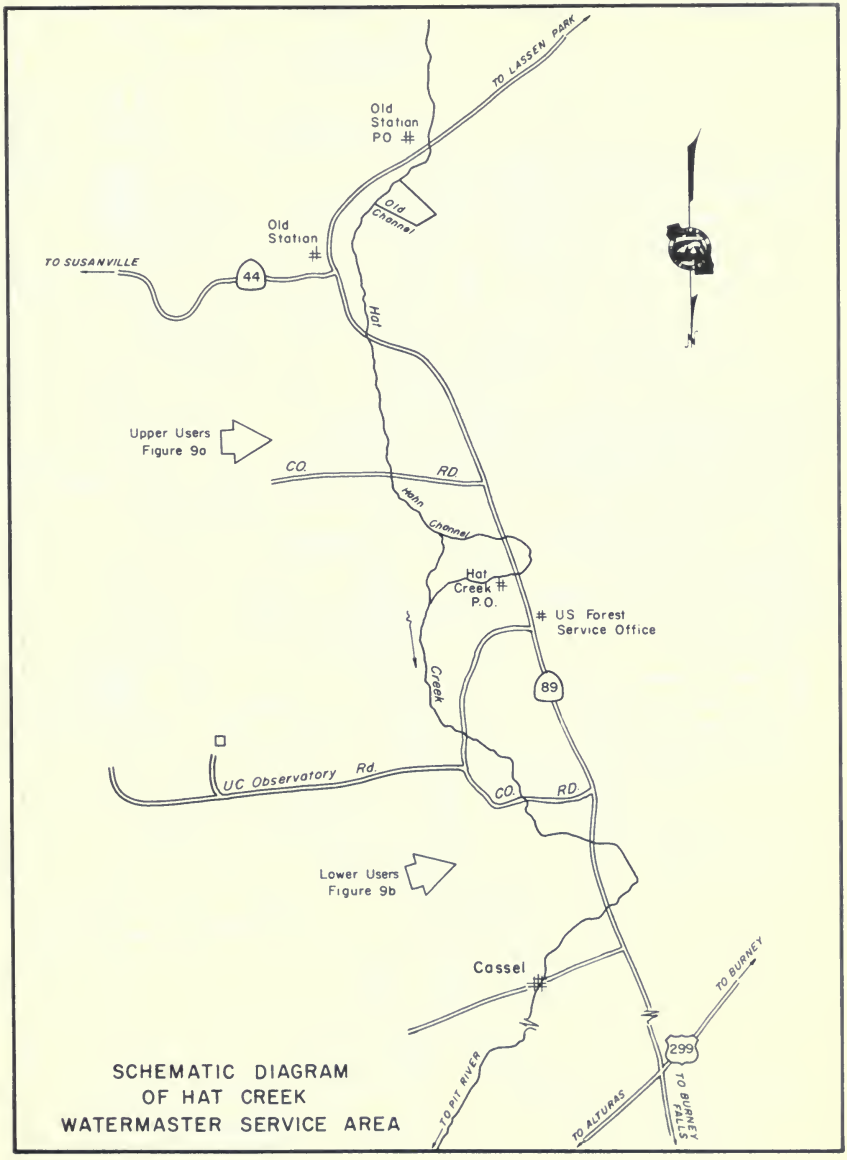
HAT CREEK WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 15

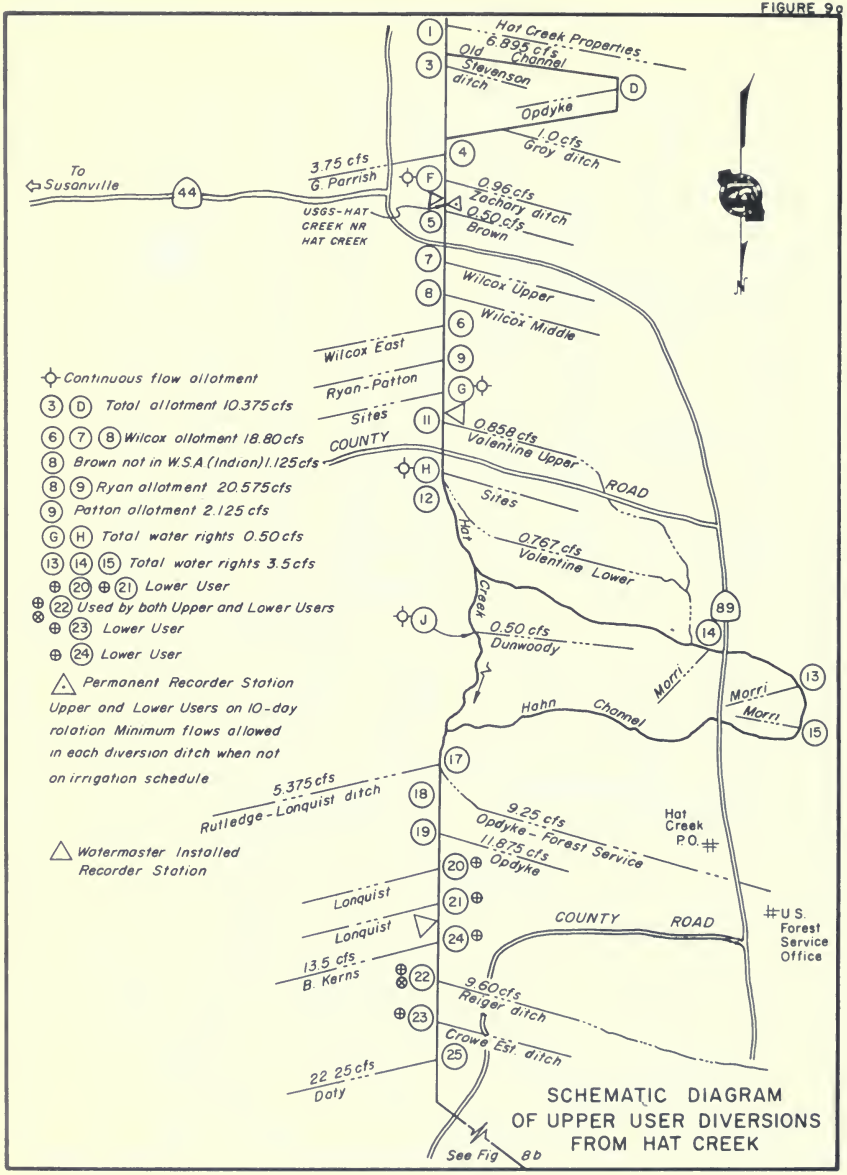
HAT CREEK NEAR HAT CREEK

Day	March	April	May	June	July	August	September	Day
1	190	166	153	232	202	171	152	1
2	184	166	157	240	200	170	152	2
3	181	166	163	251	196	168	150	3
4	184	166	172	256	194	167	152	4
5	183	167	181	256	193	166	154	5
6	180	170	184	251	188	166	153	6
7	184	171	184	247	186	166	150	7
8	188	170	187	235	184	164	157	8
9	184	171	191	223	181	159	158	9
10	181	170	190	227	184	154	153	10
11	179	171	183	215	186	154	152	11
12	177	171	179	209	184	153	153	12
13	176	172	179	209	183	154	153	13
14	181	171	183	218	181	153	153	14
15	180	168	187	212	179	153	153	15
16	179	164	200	208	177	153	152	16
17	177	158	219	208	177	153	152	17
18	174	158	228	206	177	154	152	18
19	172	159	227	209	172	162	153	19
20	171	157	219	215	170	183	153	20
21	171	157	211	227	170	162	155	21
22	170	154	220	225	168	160	159	22
23	171	153	227	222	167	159	160	23
24	171	153	227	220	166	159	159	24
25	170	154	230	214	164	158	158	25
26	170	158	240	215	163	159	157	26
27	188	158	246	230	162	159	155	27
28	188	155	237	244	162	159	157	28
29	188	155	234	232	162	155	159	29
30	188	153	228	212	168	152	160	30
31	166		225		171	150		31
Mean	176	163	203	226	179	159	155	Mean
Runoff In Acre-Feet	10840	9680	12480	13430	10940	9790	9200	Runoff In Acre-Feet

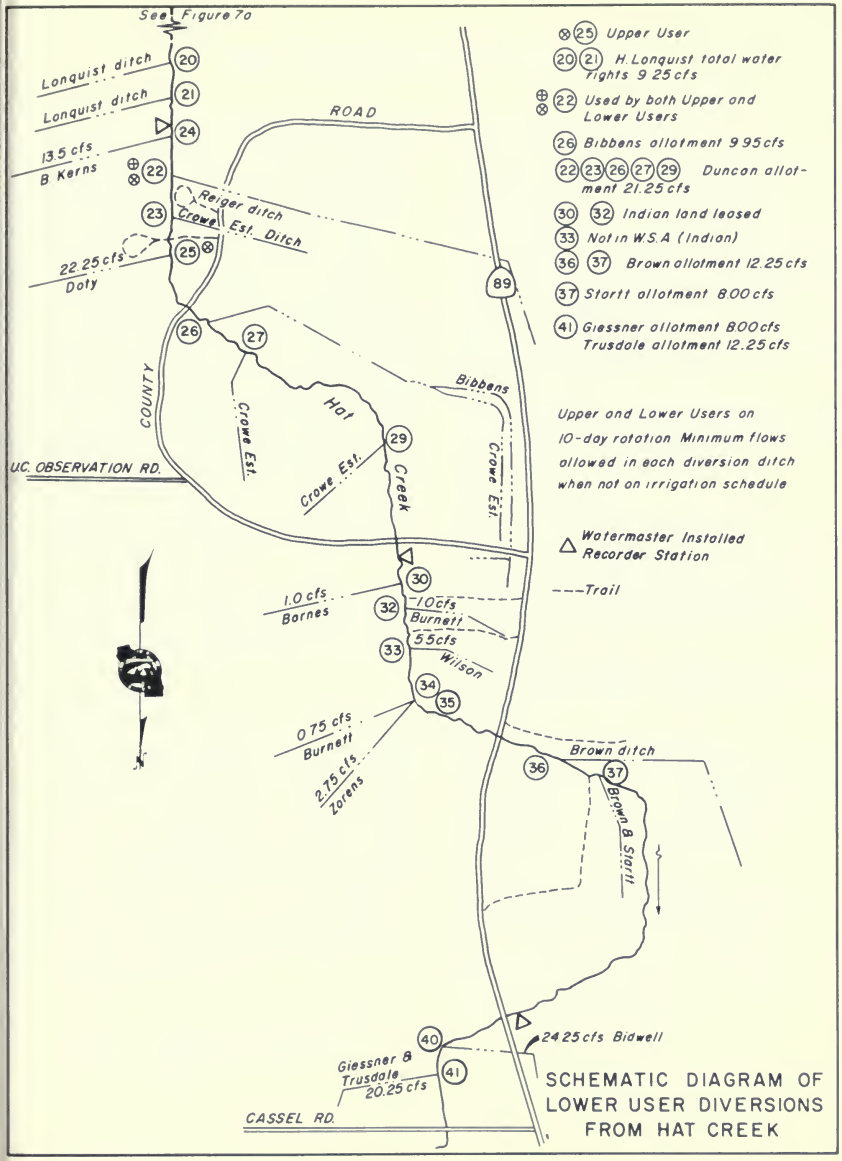


SCHEMATIC DIAGRAM
OF HAT CREEK
WATERMASTER SERVICE AREA

FIGURE 9a



SCHEMATIC DIAGRAM OF UPPER USER DIVERSIONS FROM HAT CREEK


See Figure 7a
Lonquist ditch
Lonquist ditch
13.5 cfs
B Kerns
ROAD
Reiger ditch
Crowe Est. Ditch
22.25 cfs
Doty
COUNTY
UC. OBSERVATION RD.
Crowe Est.
Hat
Creek
Crowe Est.
Crowe Est.
Bibbens
1.0 cfs
Bornes
1.0 cfs
Burnett
.55 cfs
Wilson
0.75 cfs
Burnett
2.75 cfs
Zorens
Brown ditch
Brown & Stortt
24.25 cfs Bidwell
Giessner & Trusdale
20.25 cfs
CASSEL RD.
Upper User
H. Lonquist total water rights 9.25 cfs
Used by both Upper and Lower Users
Bibbens allotment 9.95 cfs
Duncan allotment 21.25 cfs
Indian land leased
Not in W.S.A (Indian)
Brown allotment 12.25 cfs
Stortt allotment 8.00 cfs
Giessner allotment 8.00 cfs
Trusdale allotment 12.25 cfs
Upper and Lower Users on 10-day rotation Minimum flows allowed in each diversion ditch when not on irrigation schedule
Watermaster Installed Recorder Station
Trail
SCHEMATIC DIAGRAM OF LOWER USER DIVERSIONS FROM HAT CREEK

Indian Creek Watermaster Service Area

The Indian Creek service area is located in the north central part of Plumas County in the vicinity of the town of Greenville. There are 45 water right owners in the service area with total allotments of 97.015 cubic feet per second. The major sources of supply in the service area are Indian Creek and two major tributaries, Wolf Creek and Lights Creek. Indian Creek and its minor tributaries rise in the mountains east of the service area. It then flows through Gennessee Valley and through Indian Valley past the towns of Taylorsville and Crescent Mills to its confluence with the North Fork Feather River. Indian Creek is joined from the north by Lights Creek and Wolf Creek in the northwest part of the valley. The major place of use is in Indian Valley, which is about four miles long and two and one-half miles wide. The average elevation is about 3,500 feet.

A schematic drawing of each major stream system within the Indian Creek service area is presented as Figures 10 through 10c, pages 53 through 56.

Water Supply

The water supply in the Indian Creek service area is derived primarily from snowmelt runoff with springs and seepage maintaining some late summer flow. The flow of Wolf Creek is normally sufficient to supply all allotments until June 1, while Indian and Lights Creeks, with the exception of some tributaries, have sufficient flow to supply all allotments until July 1. After these dates, the flow steadily decreases throughout the season until by the end of August only a small portion of allotments is available.

A record of the daily mean discharge of Indian Creek near Taylorsville is presented in Table 16, page 52.

Method of Distribution

The basic method of irrigation in Indian Valley is wild flooding. Small diversion dams are placed in the stream channels to divert the water into distribution ditches for conveyance to the fields. Small check dams, located throughout the fields in swales, help to spread the water over the ground. There is a limited amount of check and border irrigation in the valley. A few sprinkling systems are also in use.

The Indian Creek decree (see Table 1) establishes three priority classes for each of the major stream systems within the Indian Creek service area.

1970 Distribution

Watermaster service began in the Indian Creek service area on April 15 and continued until September 30. Harvey M. Jorgensen, Water Resources Engineering Associate, was watermaster during this period.

The available supply in the service area was slightly above average during the season.

Wolf Creek. The available water supply of Wolf Creek was sufficient to satisfy all allotments (three priorities) until July 30. The streamflow gradually decreased until only first priority allotments were being served on August 15.

Lights Creek and Tributaries. The available water supply of Lights Creek was sufficient to satisfy all allotments (three priorities) until August 10. The flow steadily decreased until the stream was dry on August 30. The available water supply of Cooks Creek satisfied all allotments until July 30.

Indian Creek. The available water supply of Indian Creek was sufficient to satisfy all allotments (three priorities) until August 10. Sufficient underflow occurred below the Mill Race Diversion Dam to meet allotments of downstream users.

Special Occurrences

During the season it was necessary to install an orifice plate control device in Diversion No. 54 to facilitate the releases of water from Antelope Lake past the diversion point. State Water Project water was also routed past Diversion No. 55 during the season.

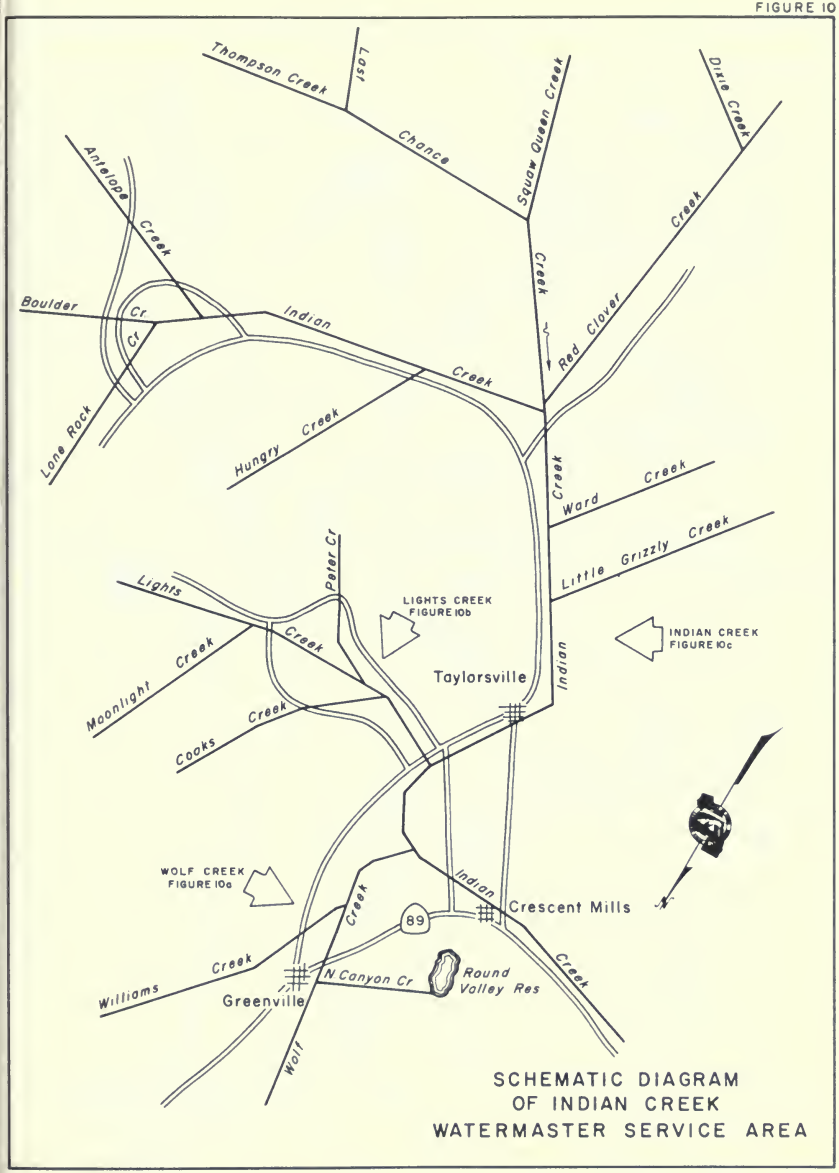
INDIAN CREEK WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

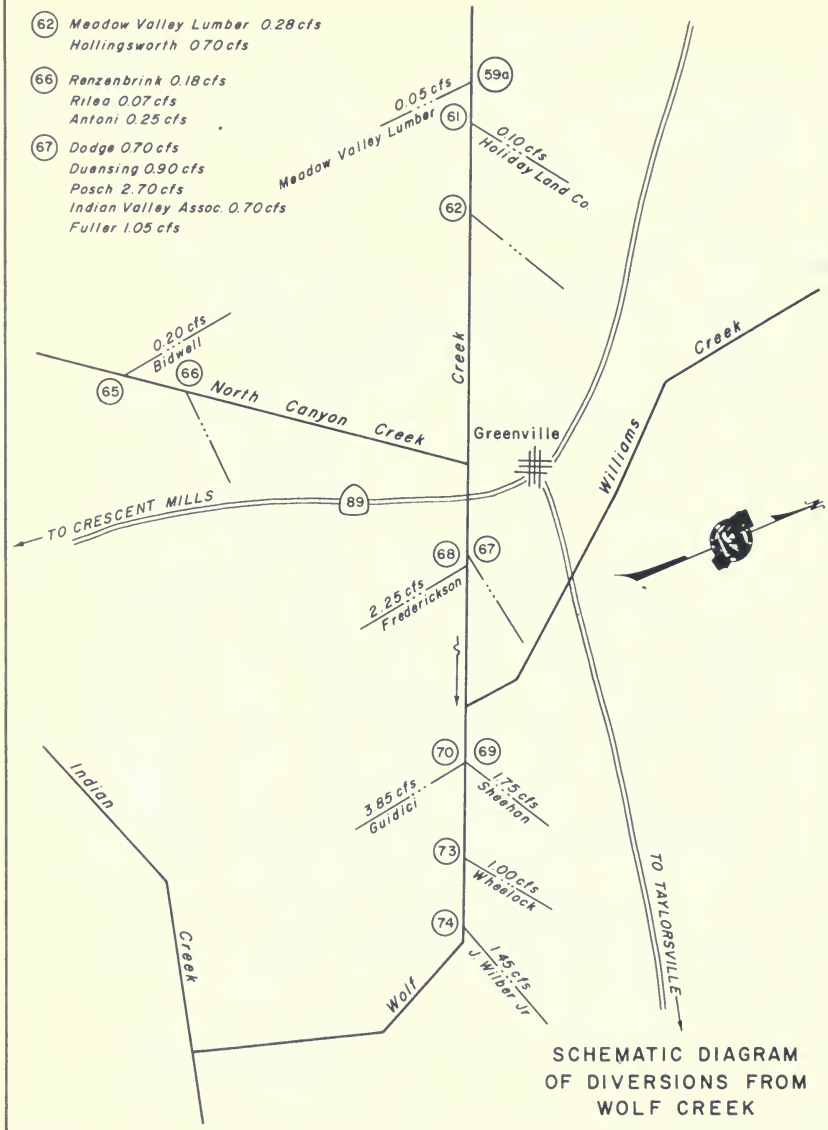
TABLE 16

INDIAN CREEK NEAR TAYLORSVILLE

Day	March	April	May	June	July	August	September	Day
1	839	544	424	395	135	50	41	1
2	708	539	420	379	125	49	41	2
3	680	520	454	371	117	48	41	3
4	660	508	514	354	110	49	42	4
5	617	511	572	337	104	48	44	5
6	821	530	810	327	97	48	48	6
7	691	542	624	302	93	47	49	7
8	839	530	617	280	91	46	44	8
9	831	538	614	274	92	47	41	9
10	742	567	735	287	92	46	37	10
11	672	815	731	267	90	46	36	11
12	637	588	675	242	87	45	37	12
13	713	571	685	247	84	44	39	13
14	819	566	644	252	80	44	41	14
15	882	537	621	230	78	43	41	15
16	839	510	650	213	73	42	35	16
17	841	494	710	196	70	41	33	17
18	753	477	733	181	68	40	34	18
19	712	471	716	165	65	40	35	19
20	686	465	679	156	64	39	37	20
21	672	438	645	151	63	38	38	21
22	662	407	624	149	61	38	37	22
23	666	385	617	136	60	38	37	23
24	683	374	596	128	59	38	39	24
25	703	368	584	124	58	38	40	25
26	894	396	590	126	57	37	41	26
27	654	450	583	138	56	37	42	27
28	635	442	533	147	55	37	42	28
29	624	440	499	155	53	38	44	29
30	605	455	465	149	52	40	45	30
31	592		432		51	40		31
Mean	709	493	600	229	78.7	42.6	40.0	Mean
Runoff In Acre-Feet	43580	29310	36890	13600	4840	2620	2380	Runoff In Acre-Feet



SCHEMATIC DIAGRAM
OF INDIAN CREEK
WATERMASTER SERVICE AREA


(62) Meadow Valley Lumber 0.28 cfs
Hollingsworth 0.70 cfs
(66) Renzenbrink 0.18 cfs
Riley 0.07 cfs
Antoni 0.25 cfs
(67) Dodge 0.70 cfs
Duensing 0.90 cfs
Posch 2.70 cfs
Indian Valley Assoc. 0.70 cfs
Fuller 1.05 cfs
59a
0.05 cfs
Meadow Valley Lumber
61
0.10 cfs
Holiday Land Co.
62
0.20 cfs
Bidwell
66
65
North Canyon Creek
Creek
Greenville
Williams
Creek
TO CRESCENT MILLS
89
68
67
2.25 cfs
Frederickson
70
69
3.85 cfs
Guidici
1.75 cfs
Sheehan
73
1.00 cfs
Wheelock
74
1.45 cfs
J. Wilber Jr
Indian
Creek
Wolf
TO TAYLORSVILLE
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
WOLF CREEK

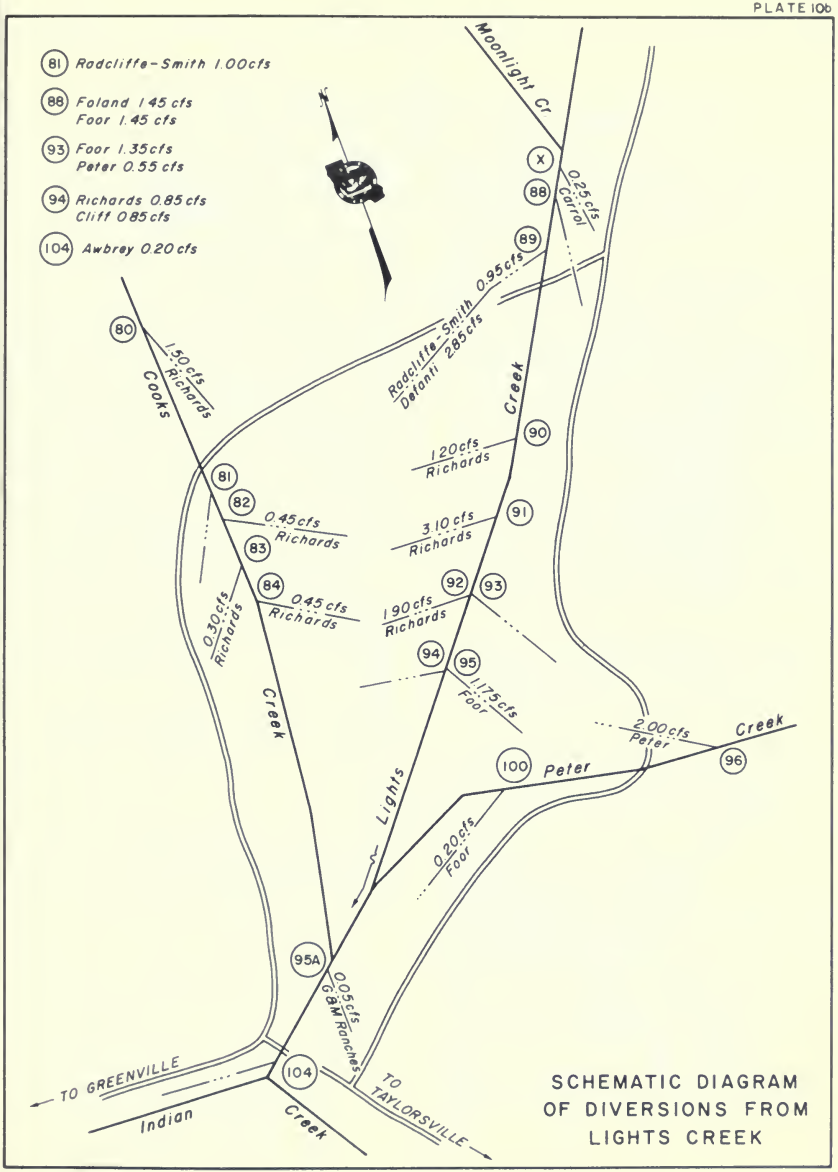
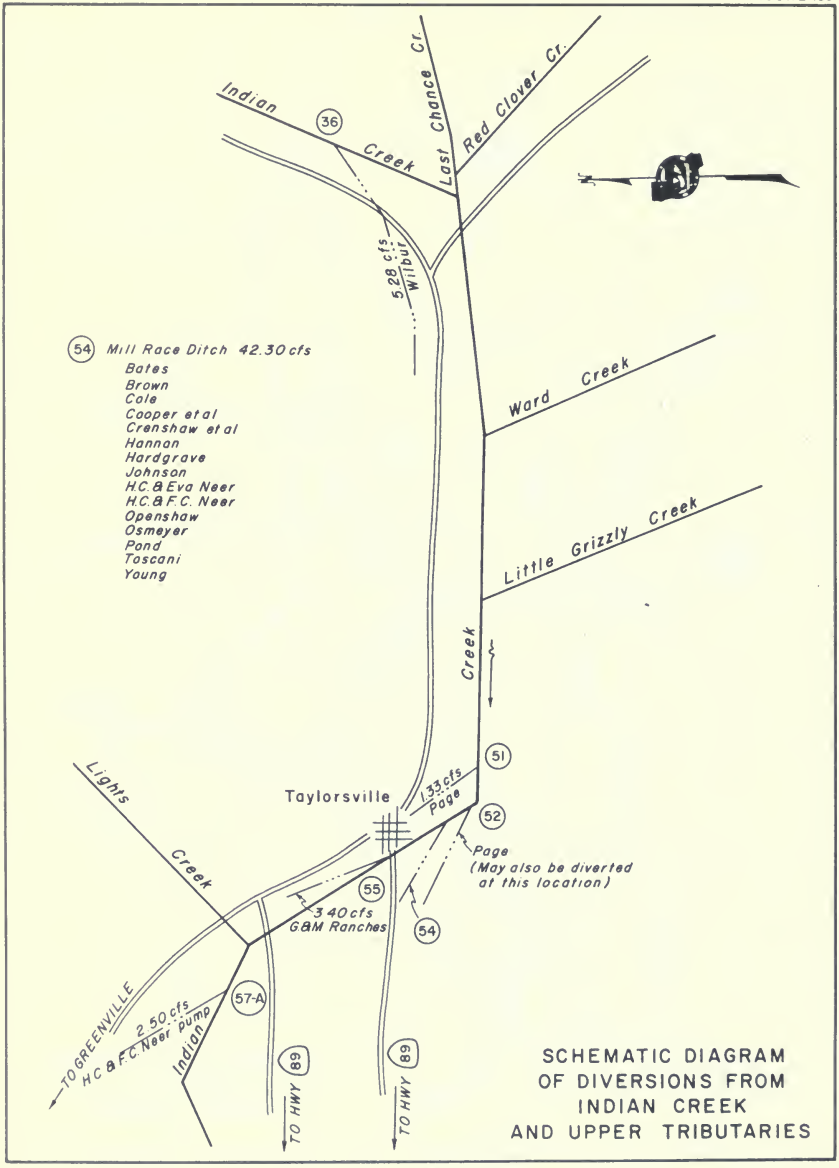

81 Radcliffe-Smith 1.00cfs
88 Foland 1.45 cfs
Foor 1.45 cfs
93 Foor 1.35cfs
Peter 0.55 cfs
94 Richards 0.85 cfs
Cliff 0.85 cfs
104 Awbrey 0.20 cfs
Moonlight Cr
X
88
0.25 cfs Carrol
89
0.95cfs
Radcliffe-Smith
Defanti 2.85cfs
80
1.50 cfs Richards
Cooks
Creek
90
1.20cfs Richards
81
82
0.45cfs Richards
91
3.10 cfs Richards
83
84
0.45 cfs Richards
92
93
1.90cfs Richards
0.30cfs Richards
94
95
1.175cfs Foor
2.00cfs Peter
Creek
96
100 Peter
Lights
Creek
0.20cfs Foor
95A
0.05cfs G & M Ranches
TO GREENVILLE
104
Indian
Creek
TO TAYLORSVILLE
SCHEMATIC DIAGRAM OF DIVERSIONS FROM LIGHTS CREEK

FIGURE 10c



SCHEMATIC DIAGRAM OF DIVERSIONS FROM INDIAN CREEK AND UPPER TRIBUTARIES

Middle Fork Feather River Watermaster Service Area

The Middle Fork Feather River service area is located in the plateau area on the west slope of the Sierra Nevada in the eastern portions of Sierra and Plumas Counties. There are 96 water right owners with total allotments of 371.465 cubic feet per second.

Major sources of supply for this service area are the Middle Fork Feather River and its tributaries in the Sierra Valley. The area is comprised of five major stream groups. These groups, starting in the north and east corner of the valley and proceeding in a southerly and westerly direction, are Little Last Chance Creek, Smithneck Creek, Webber Creek and tributaries, West Side Canal, and Fletcher Creek. The Middle Fork Feather River channel flows in a general northerly direction for approximately 20 miles through Sierra Valley. It then flows in a westerly direction. The major place of use is in Sierra Valley, which is about 15 miles long and 10 miles wide. The average elevation of the valley floor is 4,900 feet.

A schematic drawing of the Middle Fork Feather River service area is presented as Figure 11, page 60.

Water Supply

The major water supply in the Middle Fork Feather River service area is derived from snowmelt runoff, with minor flow from springs and from supplemental stored and foreign water.

Natural flows of Little Last Chance Creek are supplemented by reservoir storage provided by Frenchman Dam which was constructed by the Department of Water Resources in 1961. Stored water is released and used as needed under the provisions of an annual contract. Smithneck Creek flow is normally sufficient to supply all allotments until about the middle of May. It then decreases until about June 1. Only first and second priority allotments are then available for the remainder of the season.

The natural flow of Webber Creek is normally sufficient to supply all allotments until the middle of May. At that time up to 60 cubic feet per second is diverted from Little Truckee River to supplement the flow. This imported water is diverted through the Little Truckee Ditch into Cold Stream and then into Webber Creek for use of shareholders in the Sierra Valley Water Company. This supplemental supply decreases rapidly during July, producing only a small quantity during the latter part of the season. The West Side Canal streams normally supply all allotments until the first part of June. The flow then gradually declines throughout the season.

The flow of Fletcher Creek and Spring Channels normally supplies all allotments until July 1. The flow then gradually declines for the remainder of the season.

Records of the daily mean discharge of several stream gaging stations in the Middle Fork Feather River service area are presented in Tables 17 and 18, page 59.

Method of Distribution

Wild flooding is employed by the majority of the water users to irrigate their fields. Small diversion dams are placed in the stream channels to divert the water into individual distribution systems. Check dams are constructed in the swales to implement flooding once the water reaches the fields.

The Middle Fork Feather River decree (see Table 1) establishes the number

of priority classes for each of the major stream systems within the Middle Fork Feather River service area as follows: Little Last Chance Creek - eight; West Side Canal Group - five; Fletcher Creek and Spring Channels - three; Sierra Valley Water Company - one; Webber Creek and tributaries - six; and Smithneck Creek - five.

1970 Distribution

Watermaster service began April 1 in the Middle Fork Feather River service area and continued until September 30. Joe Nessler, Water Resources Engineering Associate, was supervising watermaster during this period. Conrad Lahr, Water Resources Technician II, assisted as deputy watermaster.

Although spring runoff was below normal, cool weather held the snowmelt back so that a near average water supply existed in the service area during the season.

West Side Canal Group. The available water supply in the West Side Canal Group, consisting of Hamlin, Miller, and Turner Creeks, was sufficient to satisfy all allotments (five priorities) until the middle of July. The water supply continued to decrease and by August there was only enough to supply first and one-third of second priorities. The rotation schedule was not employed this season.

Fletcher Creek and Spring Channels. The available water supply was sufficient to satisfy all allotments until about July 1. By the end of the season the flow had dropped off to supply only first priority allotments.

Sierra Valley Mutual Water Company. The Little Truckee Ditch delivered 8,405 acre-feet of water to the Sierra Valley Water Company from April 9 through September 30, 1970. Water was distributed to shareholders in accordance with Schedule 9 of the Middle Fork Feather River decree.

Webber Creek and Tributaries. The natural flow of Webber Creek was sufficient to supply all allotments (six priorities) until about June 1. Combined with the water imported from the Little Truckee River, the total supply was sufficient to satisfy all allotments of the Sierra Valley Water Company shareholders until mid-July. The flow decreased gradually thereafter, so that only first and second priority users were receiving water.

Smithneck Creek. The available water supply was sufficient to satisfy all allotments (five priorities) until mid-May. Due to subdivision work above Loyalton, the major portion of first priority land was not irrigated this season, thus providing more water for downstream users. A two-week rotation schedule was started May 16 for second priority users below Loyalton. By July 1, only enough water remained in this system for first priority users.

Little Last Chance Creek. Frenchman Dam and Reservoir began its ninth season of operation. Agreements concerning storage and distribution were again negotiated with the users in this stream system. Procedures and specific details of distribution and operation are covered in a separate report prepared by the Operations Branch of the Central District.

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 17

LITTLE TRUCKEE DITCH AT HEAD

Day	March	April	May	June	July	August	September	Day
1			11	58	59	5.4	1.8	1
2			12	61	58	4.6	1.8	2
3			14	61	57	4.4	1.8	3
4			22	61	54	3.9	1.6	4
5			31	60	51	3.7	1.8	5
6			33	60	51	3.4	1.8	6
7			31	60	51	3.2	1.6	7
8			30	60	46	3.0	1.6	8
9		6.7*	31	61	43	3.0	1.5	9
10		17	32	59	38	3.0	1.5	10
11		17	28	56	35	2.8	1.5	11
12		16	26	55	32	2.8	1.5	12
13		15	26	51	29	2.6	1.5	13
14		14	29	45	27	2.4	1.5	14
15		13	34	49	25	2.2	1.5	15
16		13	37	59	22	2.2	1.5	16
17		13	38	62	20	2.2	1.5	17
18		12	38	62	18	2.2	1.8	18
19		13	48	62	17	2.2	2.2	19
20		12	57	62	16	2.0	2.4	20
21		12	55	62	14	2.0	2.4	21
22		11	56	62	13	2.0	2.4	22
23		11	57	62	12	2.0	2.4	23
24		11	57	61	11	1.8	2.4	24
25		11	59	61	9.8	1.8	2.2	25
26		11	60	61	9.2	1.8	2.2	26
27		11	60	41	7.9	1.8	2.2	27
28		11	59	36	7.3	1.6	2.2	28
29		11	57	62	6.7	2.0	2.2	29
30		11	56	60	6.2	2.0	2.4	30
31			56		5.7	1.8		31
Mean		12.4	40.0	57.8	27.5	2.6	1.9	Mean
Runoff In Acre-Feet		541	2460	3440	1690	163	112	Runoff In Acre-Feet

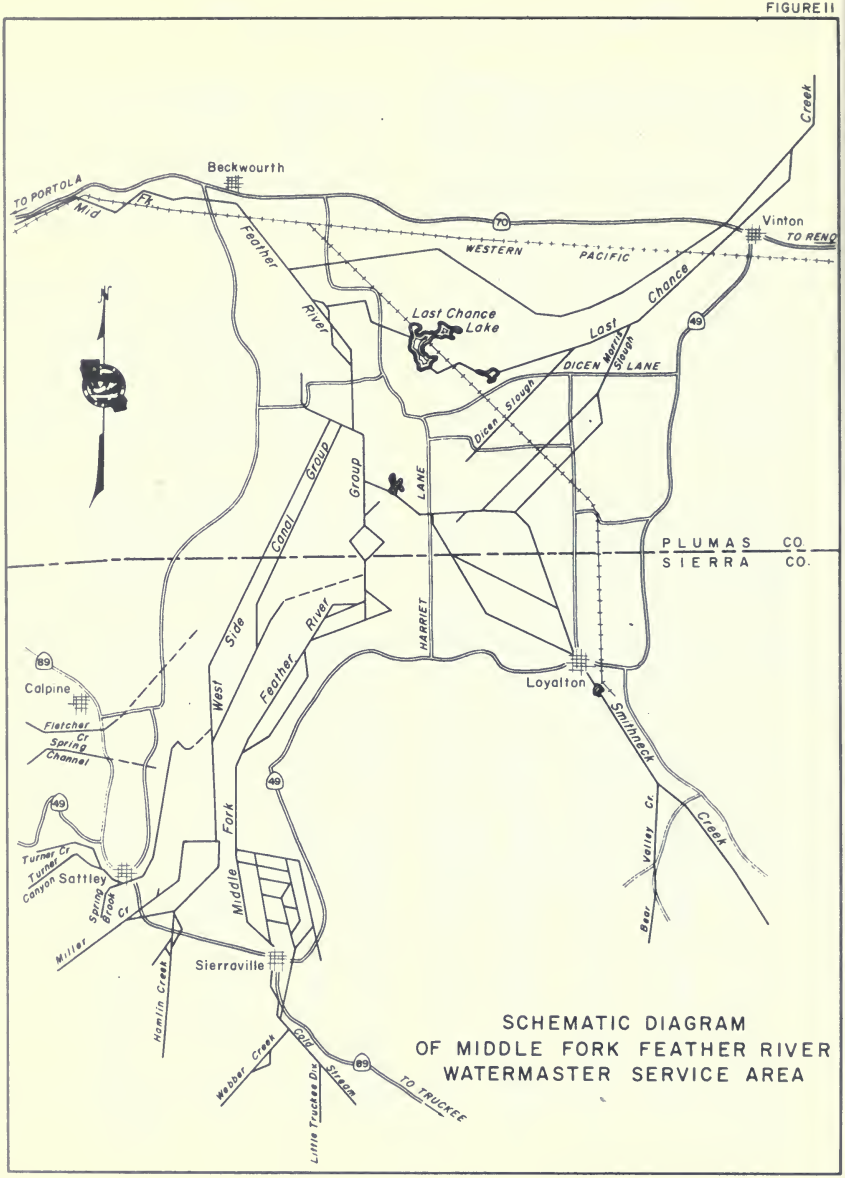
* Beginning of Flow

TABLE 18

MIDDLE FORK FEATHER RIVER AT PORTOLA

Day	March	April	May	June	July	August	September	Day
1	404	259	219	90	121	7.0	13	1
2	431	242	194	82	96	8.8	13	2
3	483	237	174	71	76	16	11	3
4	458	224	150	68	77	9.1	11	4
5	440	208	131	71	66	8.1	11	5
6	428	196	115	71	60	7.5	11	6
7	424	130	110	65	55	7.2	11	7
8	457	163	109	65	51	7.6	10	8
9	476	168	116	66	46	7.6	9.9	9
10	466	186	128	79	39	7.8	7.9	10
11	414	194	135	95	32	7.9	7.8	11
12	382	198	148	109	28	7.9	8.4	12
13	447	191	134	116	25	7.9	11	13
14	548	193	113	123	24	8.0	10	14
15	533	183	119	124	21	8.3	8.9	15
16	525	157	140	119	20	8.6	10	16
17	503	180	132	110	19	9.7	5.6	17
18	456	178	113	103	19	11	5.3	18
19	393	160	105	91	17	11	6.2	19
20	446	156	100	86	16	11	6.9	20
21	448	152	98	78	17	15	7.7	21
22	453	155	102	76	15	15	7.9	22
23	406	152	105	72	13	21	8.2	23
24	441	148	93	57	12	25	8.3	24
25	430	144	82	63	11	21	13	25
26	421	138	75	79	9.7	16	9.3	26
27	376	148	61	88	8.2	16	11	27
28	298	164	72	102	7.5	16	12	28
29	271	211	97	112	7.3	19	12	29
30	258	228	106	116	6.6	19	13	30
31	255		99		7.2	14		31
Mean	426	182	110	88.4	33.1	12.2	9.7	Mean
Runoff In Acre-Feet	26120	10840	7290	5260	2030	748	578	Runoff In Acre-Feet

FIGURE II


Beckwourth
TO PORTOLA
Mid
Fk.
Feather
River
70
WESTERN
PACIFIC
Vinton
TO RENO
Creek
Chance
Last
49
Lost Chance Lake
DICEN LANE
North Dicen Slough
Dicen Slough
Group
Canal
Group
LANE
PLUMAS CO
SIERRA CO.
HARRIET
West Side
Feather River
89
Calpine
Fletcher Cr
Spring Channel
Loyalton
Smithneck Creek
Valley Cr.
Bear
49
Turner Cr
Turner Canyon
Sattley
Spring Brook Cr
Miller
Middle Fork
Sierraville
Hamlin Creek
Webber Creek
Gold Sierra
89
TO TRUCKEE
Little Truckee Div.
SCHEMATIC DIAGRAM
OF MIDDLE FORK FEATHER RIVER
WATERMASTER SERVICE AREA

North Fork Cottonwood Creek Watermaster Service Area

The North Fork Cottonwood Creek service area is located in the southwestern part of Shasta County near the towns of Ono and Gas Point. There are 13 water right owners in the area with total allotments of 30.30 cubic feet per second.

North Fork Cottonwood Creek and its tributaries, Moon Creek and Jerusalem Creek, are the major sources of water supply in the area. These creeks rise on the east slopes of the foothills of the Coast Range Mountains. North Fork Cottonwood Creek flows in a southeasterly direction to its confluence with Cottonwood Creek near Gas Point. The area is characterized by high summer temperatures and moderate rainfall. The irrigable land consists of sparsely scattered parcels separated by steep, brushy hills. These lands are at about the 1,000-foot elevation.

A schematic drawing of the North Fork Cottonwood Creek stream system is presented as Figure 12, page 63.

Water Supply

Snowmelt contributes to the flow in North Fork Cottonwood Creek during the early weeks of the irrigation season. However, perennial springs provide the major source of supply during the summer and fall months. The flow is normally sufficient to supply all demands. In dry years, however, the available supply may be as low as 30 to 40 percent of the decreed allotments.

A record of the daily mean discharge of North Fork Cottonwood Creek near Igo is presented in Table 19. This stream gaging station is located downstream from most points of diversion on the creek, but gives a general indication of the water supply.

Method of Distribution

The general practice throughout the area is to irrigate by wild flooding. One water user, however, pumps directly from the creek using a sprinkler system to irrigate his crops. Pumping was necessary at this diversion point because the irrigated land was higher in elevation than the creek channel.

The North Fork Cottonwood Creek decree (see Table 1) provides for distribution of water on an equal and correlative basis for all users (one priority).

1970 Distribution

Watermaster service began July 1 in the North Fork Cottonwood Creek service area and continued until September 30. Kenneth E. Morgan, Water Resources Engineering Associate, was watermaster during this period.

The available water supply in North Fork Cottonwood Creek was very good. Although the streamflow decreased significantly during July, August and September, all demands were met. This was due to a few water right owners using little or none of their allotments.

Special Occurrences

Rainbow Lake remained far below its storage capacity due to the unsafe condition of Misselback Dam. Curtailment of storage will continue until extensive repairs are made.

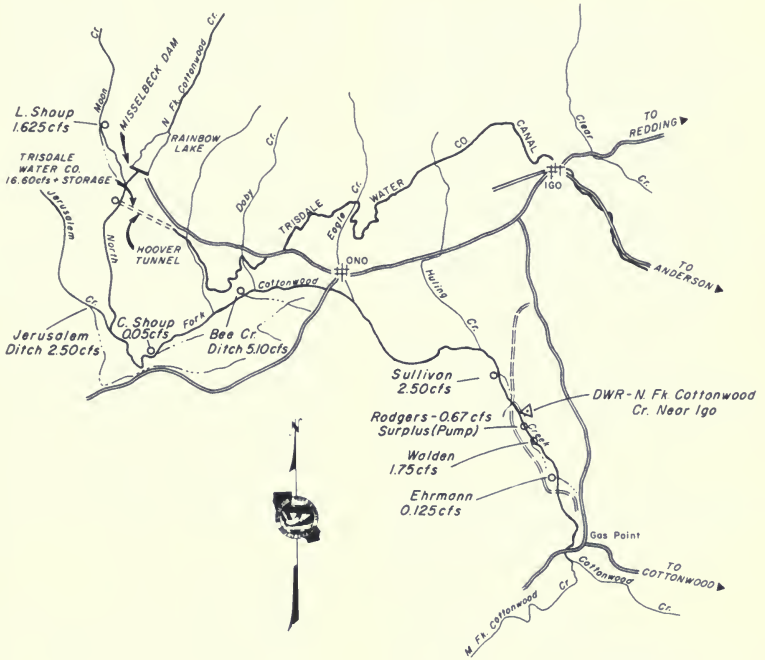
NORTH FORK COTTONWOOD CREEK WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 18

NORTH FORK COTTONWOOD CREEK NEAR IGO

Day	March	April	May	June	July	August	September	Day
1	170	178	83	18	21	2.0	2.1	1
2	127	159	76	18	18	2.0	2.0	2
3	105	157	70	20	17	1.9	2.2	3
4	585	132	71	18	16	2.0	2.5	4
5	300	128	69	16	15	2.4	2.5	5
6	242	126	70	16	15	2.8	2.5	6
7	431	125	66	16	13	2.8	3.2	7
8	371	112	59	34	13	2.5	3.4	8
9	356	120	69	65	14	2.5	3.8	9
10	338	118	68	36	9.7	2.7	3.9	10
11	342	107	67	30	8.3	2.5	3.9	11
12	317	86	69	28	8.1	2.5	3.9	12
13	319	114	68	26	7.8	2.7	3.8	13
14	331	75	61	35	7.2	2.6	3.9	14
15	309	81	55	31	6.6	2.4	3.8	15
16	298	86	54	25	6.5	3.1	3.9	16
17	228	106	49	23	6.4	3.6	3.9	17
18	295	103	48	20	5.4	3.4	3.9	18
19	287	99	27	25	4.7	2.1	3.9	19
20	261	99	29	23	4.3	1.8	3.8	20
21	227	97	28	20	3.9	1.8	3.7	21
22	239	95	37	21	2.2	2.1	3.6	22
23	233	92	31	20	2.2	1.8	3.6	23
24	223	83	27	20	2.1	1.8	3.6	24
25	207	82	29	20	2.4	1.9	2.9	25
26	210	82	26	20	2.3	2.2	2.8	26
27	178	81	23	20	2.5	2.8	2.7	27
28	154	80	24	22	2.7	2.5	2.7	28
29	193	80	23	24	2.9	2.5	2.8	29
30	190	81	24	17	2.3	1.3	3.0	30
31	185		18		2.0	1.6		31
Mean	266	104	49.0	24.2	7.0	2.3	3.0	Mean
Runoff In Acre-Feet	16370	6200	3010	1440	487	144	195	Runoff In Acre-Feet



SCHEMATIC DIAGRAM
OF N. FK. COTTONWOOD CR.
WATERMASTER SERVICE AREA

North Fork Pit River Watermaster Service Area

The North Fork Pit River service area lies along the west slopes of the Warner Mountains in northeastern Modoc County and extends from the Oregon border about 45 miles southward to a point just south of Alturas. There are 91 water right owners in the area with total allotments of 214.655 cubic feet per second.

A number of small independent stream systems, rising on the west slope of the Warner Mountains and generally following a westerly direction, comprise the major source of water supply. Three of these streams, New Pine Creek, Cottonwood Creek, and Davis Creek, are tributary to Goose Lake. All other streams in the service area are tributary to the North Fork Pit River. They are: Linville Creek, Franklin Creek, Joseph Creek, Thoms Creek, and Parker Creek. The North Fork Pit River flows in a southerly direction from the south rim of Goose Lake to its confluence with the South Fork Pit River immediately below Alturas. Streams tributary to Goose Lake do not contribute directly to the flow of the North Fork Pit River, since the lake has not spilled into the river for nearly 100 years.

The place of use in the northern half of the area lies in a relatively long, narrow, sloping strip extending between the eastern shore of Goose Lake and the foothills of the Warner Mountains. The places of use in the southern half of the area, which are supplied from the North Fork Pit River and its tributaries, are primarily in the narrow valleys bordering the streams.

A schematic drawing of each major stream system within the North Fork Pit River service area is presented as Figures 13 through 13k, pages 74 through 85.

Water Supply

The streams which serve the area are fed by snowmelt runoff and springs in the Warner Mountains. A large portion of the runoff occurs early in the spring, decreasing rapidly in May and June. The watershed of New Pine Creek, however, is at a higher elevation and maintains a good supply well into the summer. After the snowpack is depleted, perennial springs at the headwaters of the tributaries are the main sources of water supply. Linville Creek, with its small drainage basin, depends almost entirely on springs at its head. Gleason Creek, Thoms Creek, and Cottonwood Creek are usually dry in August, except during years of above-average water supply.

Some supplemental water is stored in small reservoirs throughout the area, none of which are operated by the watermaster. However, the inflows to some of these reservoirs are under the watermaster's jurisdiction.

Records of daily mean discharge at several stream gaging stations in the North Fork Pit River service area are presented in Tables 20 through 30, pages 68 through 73.

Method of Distribution

Irrigation is accomplished primarily by wild flooding from field ditches located along high spots in the meadows. Various types of diversion structures are used to divert the natural streamflow into small earth ditches which convey it to the meadows. At present there is a limited amount of sprinkler irrigation, some by naturally developed pressure and some by direct pumping from small sumps in the ditches. Subirrigation by the use of large flashboard dams to raise the water level in the stream channel is being practiced on the North

Fork Pit River between Parker Creek and Alturas. The several decrees (see Table 1) which apply to the North Fork Pit River service area establish the following number of priority classes for the various stream systems: New Pine Creek - four; Cottonwood Creek - six; Davis Creek - four; Linville Creek - two; Franklin Creek - four; Joseph Creek - four; Thoms Creek - three; Parker Creek - four; Shields Creek - four; Gleason Creek - five; and North Fork Pit River - five.

1970 Distribution

Watermaster service began April 20 in the North Fork Pit River service area and continued until September 30. Charles H. Holmes, Assistant Engineer, Water Resources, was watermaster during this period.

The available water supply during the spring months was excellent throughout the service area. Because of a very warm summer, however, streamflows during the latter part of the season were at or near average conditions.

New Pine Creek. Surplus water was available to New Pine Creek water right owners throughout the period that the proration or correlative system of distribution was in effect (until June 30). Commencing July 1, in accordance with provisions of the decree, distribution was based on the priority system (four priorities). Fourth priority allotments were satisfied until August 1. Thereafter, the flow gradually decreased until approximately 80 percent of second priority allotments were being met at the end of the season.

Cottonwood Creek. A sufficient water supply existed in Cottonwood Creek to satisfy all allotments (six priorities) until late spring. The fourth priority allotments were served until June 7. Thereafter, the flow decreased gradually, reaching first priority level on August 1. By the end of the season the flow had decreased until only about 6 percent of first priority allotments were served.

Davis Creek. The available water supply in Davis Creek was sufficient to satisfy all allotments (four priorities) until June 2. One hundred percent of third priority allotments were served until June 22. The flow then steadily decreased, reaching 100 percent of the second priority allotments on August 11. At the end of the season the flow had receded slightly to 33 percent of second priority allotments.

Linville Creek. The available water supply in Linville Creek decreased steadily from the time watermaster service began until the end of the irrigation season. The available supply for first priority allotments ranged from 77 percent on May 20 to 50 percent at the end of the season.

Franklin Creek. The available water supply in Franklin Creek was sufficient to satisfy all allotments (four priorities) from May 6 until May 30. One hundred percent of the third priorities were served until May 17. The flow then gradually decreased until mid-September when 16 percent of third priority allotments were being served. On September 15 the winter schedule of priorities became effective. Under this schedule, only 10 percent of third priority allotments were met.

Joseph Creek. A surplus water supply existed in Joseph Creek until June 26. The flow then receded rapidly until on July 25 only first priority allotments (four priorities) were served. Thereafter, the flow gradually decreased to 50 percent of first priority allotments at the end of the season.

Thoms Creek. A sufficient water supply existed in Thoms Creek to meet all allotments (three priorities) until July 14. The flow then gradually decreased to 10 percent of third priority allotments at the end of the season.

Gleason Creek. The available water supply in Gleason Creek was sufficient to satisfy fourth priority allotments (five priorities) until May 4. The flow then rapidly dropped to 100 percent of third priority allotments by May 30. By August 1 the creek was dry.

Shields Creek. A surplus water supply existed in Shields Creek until mid-June. The flow decreased rapidly until approximately 75 percent of second priority allotments (four priorities) were served on July 31. The supply then gradually decreased until the end of September when 30 percent of second priority allotments were being supplied.

Parker Creek. The flow in Parker Creek peaked in mid-May and continued to serve 100 percent of all allotments (four priorities) until mid-June. From then until late September the flow continued to decrease gradually. At that time about 20 percent of third priority allotments were served.

North Fork Pit River. A surplus water supply existed in the North Fork Pit River until June 1. On that date the Dorris Reservoir allotments were reduced. The flow then decreased rapidly until July 1 when only first priority allotments (five priorities) were being served. The decrease continued until July 26 when only 75 percent of first priority was available. This condition continued throughout the remainder of the season.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 20

NEW PINE CREEK BELOW SCHROEDER'S

Day	March	April	May	June	July	August	September	Day
1			6.0	20	10	7.7	6.6	1
2			6.1	20	10	7.7	6.6	2
3			6.5	20	10	7.6	6.6	3
4			11	21	10	7.6	6.9	4
5			12	20	10	7.5	6.6	5
6			12	20	9.9	7.4	6.8	6
7			12	20	9.9	7.4	6.6	7
8			14	20	9.6	7.3	6.6	8
9			16	20	9.7	7.3	6.4	9
10			15	20	9.7	7.3	6.4	10
11			14	18	9.7	7.4	6.3	11
12			13	17	9.6	7.4	6.3	12
13			12	16	9.2	7.3	6.4	13
14			12	16	9.2	7.1	6.4	14
15			12	15	9.2	7.0	6.6	15
16			14	15	9.0	6.9	6.4	16
17		7.6*	17	15	9.0	6.9	6.3	17
18		7.6	20	15	8.9	6.9	6.2	18
19		7.5	20	14	8.9	6.9	6.2	19
20		7.4	20	14	8.8	6.9	6.2	20
21		7.3	17	13	8.6	6.9	6.2	21
22		7.3	17	13	8.5	6.9	6.2	22
23		7.3	20	13	8.4	6.9	6.2	23
24		7.3	20	12	8.1	6.9	6.0	24
25		7.3	20	12	8.0	6.9	6.0	25
26		7.4	22	12	8.0	6.9	6.0	26
27		7.5	23	11	8.0	6.9	6.0	27
28		7.6	23	12	8.0	6.9	6.0	28
29		7.7	21	11	8.0	6.8	6.0	29
30		7.8	21	10	7.9	6.8	6.0	30
31			20		7.6	6.8		31
Mean		7.5	15.9	15.8	9.3	7.1	6.3	Mean
Runoff In Acre-Feet		207	981	942	555	439	378	Runoff In Acre-Feet

* Beginning of Record

TABLE 21

COTTONWOOD CREEK BELOW LARKIN GARDEN DITCH

Day	March	April	May	June	July	August	September	Day
1			4.4	9.9	3.1	0.9	0.1	1
2			6.7	9.7	3.0	0.9	0.1	2
3			8.9	9.2	2.9	0.9	0.1	3
4			12	8.2	2.8	0.9	0.2	4
5			13	7.6	2.6	0.6	0.2	5
6			9.5	6.7	2.5	0.6	0.3	6
7			9.9	5.7	2.3	0.7	0.3	7
8			12	4.9	2.1	0.6	0.2	8
9			20	4.7	2.0	0.6	0.2	9
10			24	4.4	1.8	0.5	0.2	10
11			21	3.9	1.7	0.5	0.1	11
12			17	3.8	1.6	0.4	0.1	12
13			14	3.7	1.6	0.4	0.2	13
14			13	3.6	1.5	0.3	0.2	14
15			12	3.5	1.4	0.3	0.3	15
16			13	3.5	1.3	0.2	0.3	16
17			15	3.4	1.2	0.2	0.3	17
18			19	3.4	1.2	0.2	0.3	18
19			21	3.4	1.2	0.2	0.3	19
20			21	3.3	1.2	0.2	0.3	20
21			21	3.3	1.0	0.2	0.3	21
22		3.5*	21	3.3	1.2	0.2	0.3	22
23		3.4	21	3.2	1.1	0.2	0.3	23
24		3.4	18	3.1	1.0	0.2	0.3	24
25		3.4	16	3.1	0.9	0.2	0.3	25
26		3.4	14	2.9	0.9	0.2	0.3	26
27		3.5	12	3.0	0.9	0.2	0.3	27
28		3.5	10	3.4	0.8	0.1	0.3	28
29		3.5	9.7	3.9	0.8	0.1	0.3	29
30		3.6	9.9	3.4	0.9	0.2	0.3	30
31			9.9		0.9	0.1		31
Mean		3.5	14.5	4.6	1.6	0.4	0.2	Mean
Runoff In Acre-Feet		62	890	277	98	25	14	Runoff In Acre-Feet

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 22

DAVIS CREEK AT OLD FISH WHEEL

Day	March	April	May	June	July	August	September	Day
1			21	71	31	6.8	1.7	1
2			22	71	28	6.8	1.7	2
3			23	68	25	6.8	2.3	3
4			25	63	25	6.8	4.6	4
5			29	62	25	6.0	4.2	5
6			31	63	26	5.5	3.3	6
7			33	60	26	5.5	3.3	7
8			38	59	20	5.5	3.3	8
9			41	56	19	5.5	4.2	9
10			42	53	18	5.5	4.2	10
11			43	48	18	5.5	4.2	11
12			44	46	17	5.0	4.6	12
13			44	45	17	5.0	4.2	13
14			43	45	16	5.0	3.3	14
15			43	44	15	4.6	1.7	15
16		18*	45	41	12	4.6	1.7	16
17		18	48	39	11	4.6	4.2	17
18		19	53	36	10	5.0	3.3	18
19		19	57	34	9.4	5.0	2.3	19
20		18	63	34	8.5	4.2	3.3	20
21		18	72	34	8.5	4.2	3.3	21
22		18	72	33	8.5	4.2	4.2	22
23		18	74	33	8.5	3.3	3.3	23
24		18	74	32	8.5	4.2	3.3	24
25		18	78	32	8.5	4.2	3.3	25
26		19	79	34	8.5	2.3	3.3	26
27		19	77	38	8.5	1.7	3.3	27
28		18	74	33	7.2	1.7	3.3	28
29		19	74	31	7.2	1.7	3.3	29
30		21	72	31	7.2	1.7	3.3	30
31			72		7.2	1.7		31
Mean		18.5	51.8	45.6	14.0	4.5	3.3	Mean
Runoff In Acre-Feet		551	3180	2720	919	279	197	Runoff In Acre-Feet

* Beginning of Record

TABLE 23

LINVILLE CREEK AT OLD POWER HOUSE

Day	March	April	May	June	July	August	September	Day
1			1.9	2.4	2.0	1.9	1.9	1
2			1.9	2.3	2.0	1.9	1.9	2
3			1.9	2.3	1.9	1.9	1.9	3
4			1.9	2.3	1.9	1.9	1.9	4
5			1.9	2.3	1.9	1.9	1.9	5
6			1.9	2.3	1.9	1.9	1.9	6
7			1.9	2.3	1.9	1.9	1.9	7
8			2.2	2.2	1.9	1.9	1.9	8
9			2.4	2.2	1.9	1.9	1.9	9
10			2.6	2.2	1.9	1.9	1.9	10
11			2.6	2.2	1.9	1.9	1.9	11
12			2.6	2.2	1.9	1.9	1.9	12
13			2.6	2.2	1.9	1.9	1.9	13
14			2.6	2.2	1.9	1.9	1.9	14
15			2.6	2.2	1.9	1.9	1.9	15
16			2.8	2.2	1.9	1.9	1.9	16
17			2.6	2.2	1.9	1.9	1.9	17
18			2.9	2.2	1.9	1.9	1.9	18
19			3.0	2.2	1.9	1.9	1.9	19
20			3.0	2.2	1.9	1.9	1.9	20
21		1.8*	3.0	2.2	1.9	1.9	1.9	21
22		1.8	2.9	2.2	1.8	1.9	1.9	22
23		1.8	2.9	2.1	1.8	1.9	1.9	23
24		1.8	2.8	2.1	1.8	1.9	1.9	24
25		1.9	2.7	2.1	1.8	1.9	1.9	25
26		1.9	2.7	2.1	1.8	1.9	1.9	26
27		1.9	2.6	2.1	1.9	1.9	1.9	27
28		1.9	2.6	2.1	1.9	1.9	1.9	28
29		1.9	2.5	2.0	1.9	1.9	1.9	29
30		1.9	2.4	2.0	1.9	1.9	1.9	30
31			2.4		1.9	1.9		31
Mean		1.9	2.5	2.2	1.9	1.9	1.9	Mean
Runoff In Acre-Feet		37	153	131	116	117	113	Runoff In Acre-Feet

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 24

FRANKLIN CREEK ABOVE DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1			8.8	8.7	4.6	2.7	2.5	1
2			7.5	9.5	4.2	2.7	2.4	2
3			8.0	9.5	4.1	2.7	2.4	3
4			8.7	10	3.9	2.7	2.6	4
5			9.5	8.8	3.8	2.6	2.7	5
6			11	8.5	3.6	2.6	2.6	6
7			12	8.3	3.7	2.6	2.6	7
8			14	8.3	3.7	2.6	2.6	8
9			15	8.3	3.4	2.6	2.4	9
10			14	8.2	3.2	2.6	2.4	10
11			14	7.4	3.1	2.6	2.6	11
12			13	7.5	3.2	2.5	2.6	12
13			12	7.1	3.2	2.5	2.6	13
14			12	7.2	3.2	2.5	2.6	14
15			12	6.8	3.2	2.5	2.5	15
16			13	6.8	3.2	2.5	2.5	16
17		4.2*	15	6.6	3.1	2.5	2.4	17
18		4.2	17	6.0	3.1	2.6	2.6	18
19		4.2	18	5.7	3.1	2.5	2.6	19
20		4.2	17	5.6	2.9	2.5	2.6	20
21		4.6	16	5.4	3.1	2.5	2.5	21
22		4.6	16	5.3	3.1	2.4	2.5	22
23		4.6	15	5.2	2.9	2.5	2.5	23
24		4.6	15	5.0	2.8	2.5	2.4	24
25		4.5	14	4.6	2.8	2.5	2.4	25
26		4.3	14	4.6	2.6	2.4	2.4	26
27		8.3	14	4.9	2.8	2.4	2.4	27
28		8.3	13	4.9	2.9	2.4	2.4	28
29		4.6	12	4.7	2.8	2.4	2.4	29
30		7.1	12	4.6	2.7	2.4	2.4	30
31			9.5		2.7	2.4		31
Mean		4.9	12.9	6.8	3.3	2.5	2.5	Mean
Runoff In Acre-Feet		135	794	407	201	156	149	Runoff In Acre-Feet

* Beginning of Record

TABLE 25

JOSEPH CREEK BELOW COUCH CREEK

Day	March	April	May	June	July	August	September	Day
1			14	13	5.7	1.7	1.0	1
2			15	12	5.3	1.7	1.0	2
3			15	12	5.1	1.6	1.0	3
4			14	12	5.1	1.8	1.6	4
5			14	12	5.0	1.9	1.3	5
6			14	13	4.7	1.7	1.2	6
7			14	12	4.6	1.7	1.2	7
8			16	12	4.3	1.6	1.1	8
9			22	12	4.1	1.6	1.1	9
10			22	14	4.0	1.6	1.1	10
11			21	10	3.8	1.6	1.1	11
12			21	9.8	3.5	1.5	1.1	12
13			20	9.5	3.2	1.3	1.1	13
14			19	9.6	3.2	1.3	1.2	14
15			18	8.8	3.1	1.2	1.2	15
16			18	8.6	2.9	1.1	1.2	16
17		6.8*	16	8.0	2.9	1.1	1.2	17
18		6.8	19	7.1	2.8	1.1	1.2	18
19		6.9	26	6.7	2.7	1.1	1.8	19
20		6.7	25	6.7	2.7	1.1	1.6	20
21		6.4	22	6.6	2.8	1.1	1.9	21
22		6.2	18	6.4	2.7	1.1	1.8	22
23		6.5	17	6.2	2.8	1.0	1.2	23
24		6.4	15	5.9	2.6	1.1	1.1	24
25		6.7	18	5.8	2.5	1.1	1.0	25
26		7.0	18	6.0	2.5	1.2	1.0	26
27		7.4	19	6.5	2.2	1.2	1.0	27
28		7.9	21	6.2	2.2	1.2	1.1	28
29		8.4	17	6.4	2.0	1.2	1.6	29
30		8.6	16	5.9	1.9	1.1	1.6	30
31			14		1.7	1.0		31
Mean		7.1	17.9	9.1	3.4	1.3	1.2	Mean
Runoff In Acre-Feet		198	1100	541	207	82	74	Runoff In Acre-Feet

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 28

NORTH FORK PIT RIVER BELOW THOMS CREEK

Day	March	April	May	June	July	August	September	Day
1			28	17	4.8	0.7	0.2	1
2			35	15	4.8	0.7	0.2	2
3			36	14	4.3	0.6	0.2	3
4			41	14	3.9	0.6	0.3	4
5			40	13	3.8	0.6	0.5	5
6			37	18	3.8	0.6	0.5	8
7			35	13	3.6	0.7	0.5	7
8			37	13	3.8	0.5	0.5	8
9			42	12	3.6	0.4	0.5	9
10			41	18	3.1	0.3	0.5	10
11			41	12	2.8	0.3	0.5	11
12			40	12	2.6	0.3	0.5	12
13			39	12	2.5	0.3	0.5	13
14			40	12	2.1	0.3	0.5	14
15			43	11	2.1	0.2	0.5	15
16			48	10	1.9	0.2	0.5	16
17			49	9.8	1.6	0.2	0.5	17
18			50	8.7	1.5	0.2	0.7	18
19			48	7.2	1.5	0.2	0.6	19
20			43	6.5	1.5	0.2	0.5	20
21		9.1*	39	6.3	1.5	0.2	0.5	21
22		9.1	36	5.8	1.4	0.2	0.6	22
23		9.1	36	5.4	1.3	0.2	0.5	23
24		10	34	4.8	1.0	0.2	0.6	24
25		9.3	31	5.4	0.6	0.2	0.6	25
26		9.1	30	5.2	0.5	0.1	0.7	26
27		9.6	29	6.5	0.8	0.2	0.7	27
28		11	27	9.3	0.7	0.2	0.7	28
29		13	25	8.7	0.5	0.2	0.7	29
30		19	22	5.4	0.6	0.2	0.7	30
31			20		0.7	0.2		31
Mean		[10.8]	[36.8]	[10.2]	2.2	0.3	0.5	Mean
Runoff In Acre-Feet		215	2260	605	136	20	31	Runoff In Acre-Feet

* Beginning of Record

TABLE 27

THOMS CREEK AT CEDARVILLE-ALTURAS HIGHWAY

Day	March	April	May	June	July	August	September	Day
1						7.0	8.2	1
2						7.0	6.5	2
3						6.5	6.1	3
4						6.1	6.5	4
5						6.5	8.2	5
6						6.1	8.2	8
7						6.1	7.6	7
8						6.1	6.5	8
9						6.5	6.1	9
10						6.5	6.1	10
11						8.2	5.8	11
12						9.0	5.8	12
13						9.0	5.8	13
14						9.8	6.1	14
15						10	6.1	15
16						11	6.1	16
17						11	6.1	17
18						11	6.1	18
19						10	7.0	19
20						10	8.2	20
21						10	6.5	21
22						10	7.0	22
23						9.8	7.0	23
24						9.8	6.5	24
25					3.5*	9.8	6.1	25
26					6.1	9.0	5.8	26
27					6.5	9.8	4.0	27
28					8.2	8.2	3.5	28
29					7.6	6.5	3.5	29
30					9.0	7.0	3.5	30
31					8.2	8.2		31
Mean					7.0	8.4	6.2	Mean
Runoff In Acre-Feet					97	519	370	Runoff In Acre-Feet

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 28

PARKER CREEK AT FOGARTY RANCH

Day	March	April	May	June	July	August	September	Day
1				42	18	7.7	1.7	1
2				40	16	8.8	2.1	2
3				40	15	8.3	2.1	3
4				38	15	8.0	1.8	4
5				35	20	5.5	1.9	5
6				35	16	5.0	1.7	6
7				33	16	4.4	1.7	7
8			80*	32	15	4.2	1.7	8
9			99	32	14	4.2	1.2	9
10			98	44	13	4.2	1.7	10
11			90	33	12	4.0	0.8	11
12			86	32	12	3.8	0.7	12
13			92	34	11	3.6	1.7	13
14			86	37	11	2.5	2.1	14
15			83	30	9.6	1.8	2.1	15
16			81	27	8.6	1.7	2.1	16
17			98	27	8.0	1.0	1.9	17
18			95	25	6.9	0.8	1.7	18
19			81	22	6.3	0.5	1.8	19
20			85	21	5.5	0.4	2.6	20
21			80	21	5.0	0.4	2.8	21
22			78	21	4.2	0.5	2.5	22
23			78	19	4.0	0.4	2.1	23
24			74	19	3.2	0.4	2.1	24
25			71	16	3.0	0.2	2.1**	25
26			72	17	2.5	0.2		26
27			72	25	2.1	0.2		27
28			64	33	1.4	0.2		28
29			60	20	4.4	0.2		29
30			50	16	8.6	0.9		30
31			46		8.6	1.0		31
Mean			80.4	28.9	9.5	2.9	1.9	Mean
Runoff In Acre-Feet			3830	1720	583	157	93	Runoff In Acre-Feet

* Beginning of Record
** End of Record

TABLE 29

SHIELDS CREEK BELOW PEPPERDINE RANCH

Day	March	April	May	June	July	August	September	Day
1				5.6	4.6	3.0	2.0	1
2				5.9	4.4	2.7	1.9	2
3				5.6	4.2	2.6	1.8	3
4				5.3	4.3	2.8	1.9	4
5			7.6*	5.3	5.0	2.6	1.9	5
6			7.6	5.3	4.2	2.3	2.0	6
7			7.6	5.3	3.8	2.1	2.0	7
8			9.4	5.1	4.1	2.1	2.1	8
9			9.9	5.7	4.1	2.1	2.1	9
10			10	7.9	4.1	2.1	2.1	10
11			10	5.9	4.1	2.1	2.1	11
12			10	5.8	3.8	2.2	2.1	12
13			10	5.9	3.8	2.2	2.0	13
14			10	6.5	3.4	2.3	2.1	14
15			9.2	5.8	1.9	2.6	2.1	15
16			9.2	5.3	1.7	2.8	2.1	16
17			9.4	5.1	1.8	3.2	2.2	17
18			9.4	4.9	1.8	3.5	2.2	18
19			9.2	4.7	1.8	2.7	2.4	19
20			8.6	4.5	2.0	2.7	2.8	20
21			9.4	4.8	2.4	2.1	2.4	21
22			9.2	4.6	3.1	2.1	2.2	22
23			9.0	4.6	5.8	2.1	2.1	23
24			8.8	4.8	8.1	2.0	2.0**	24
25			8.6	4.7	6.3	1.9		25
26			8.4	4.9	6.3	2.1		26
27			8.2	5.6	6.8	2.0		27
28			7.8	7.3	6.1	1.9		28
29			7.3	5.9	3.8	1.9		29
30			6.7	5.3	3.2	1.9		30
31			5.7		3.4	2.0		31
Mean			8.8	5.6	3.9	2.4	2.1	Mean
Runoff In Acre-Feet			470	325	241	145	100	Runoff In Acre-Feet

* Beginning of Record
** End of Record

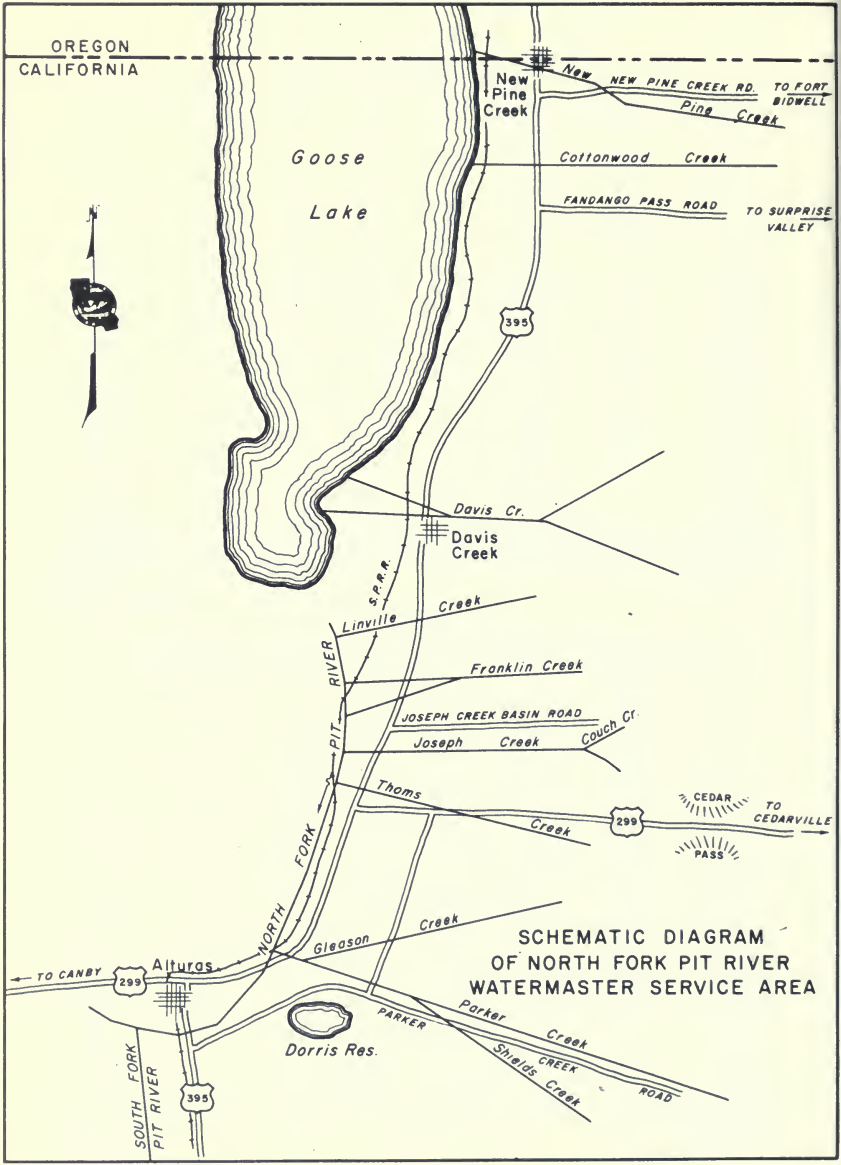
NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

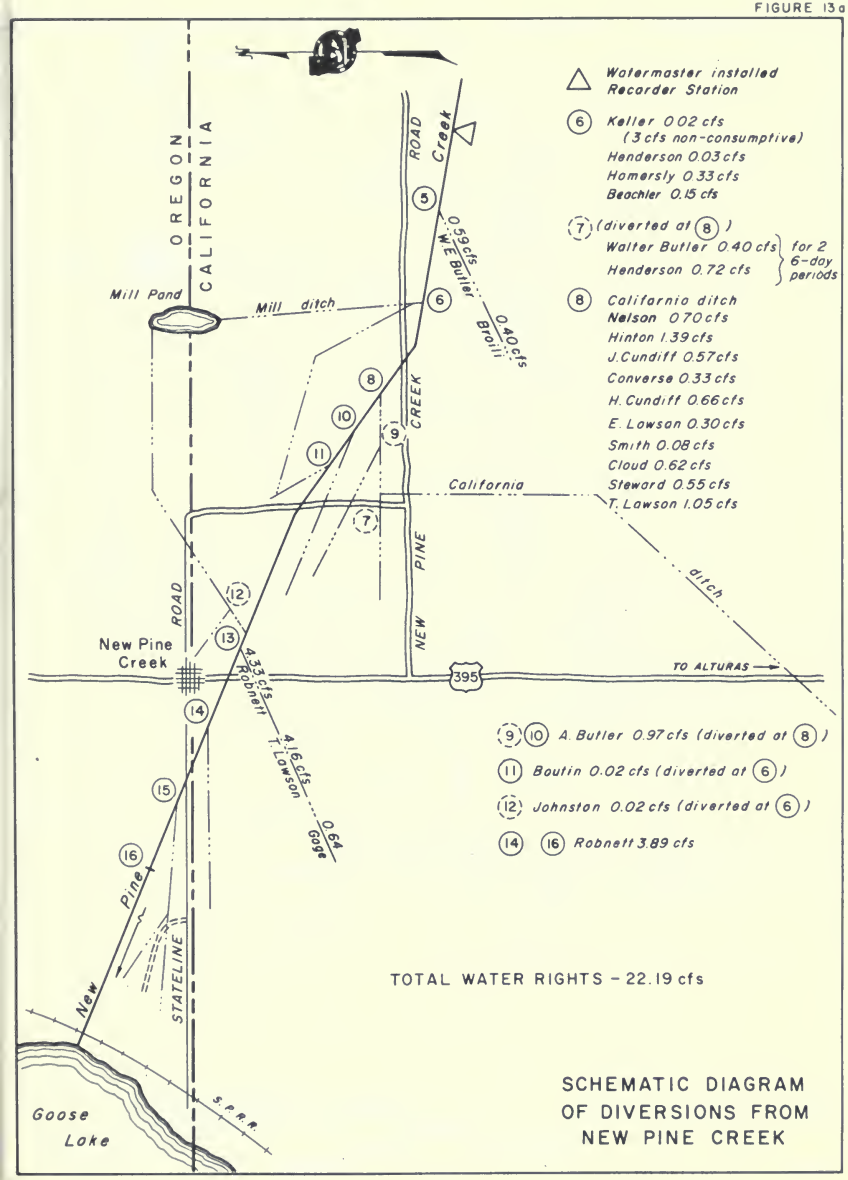
1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 30

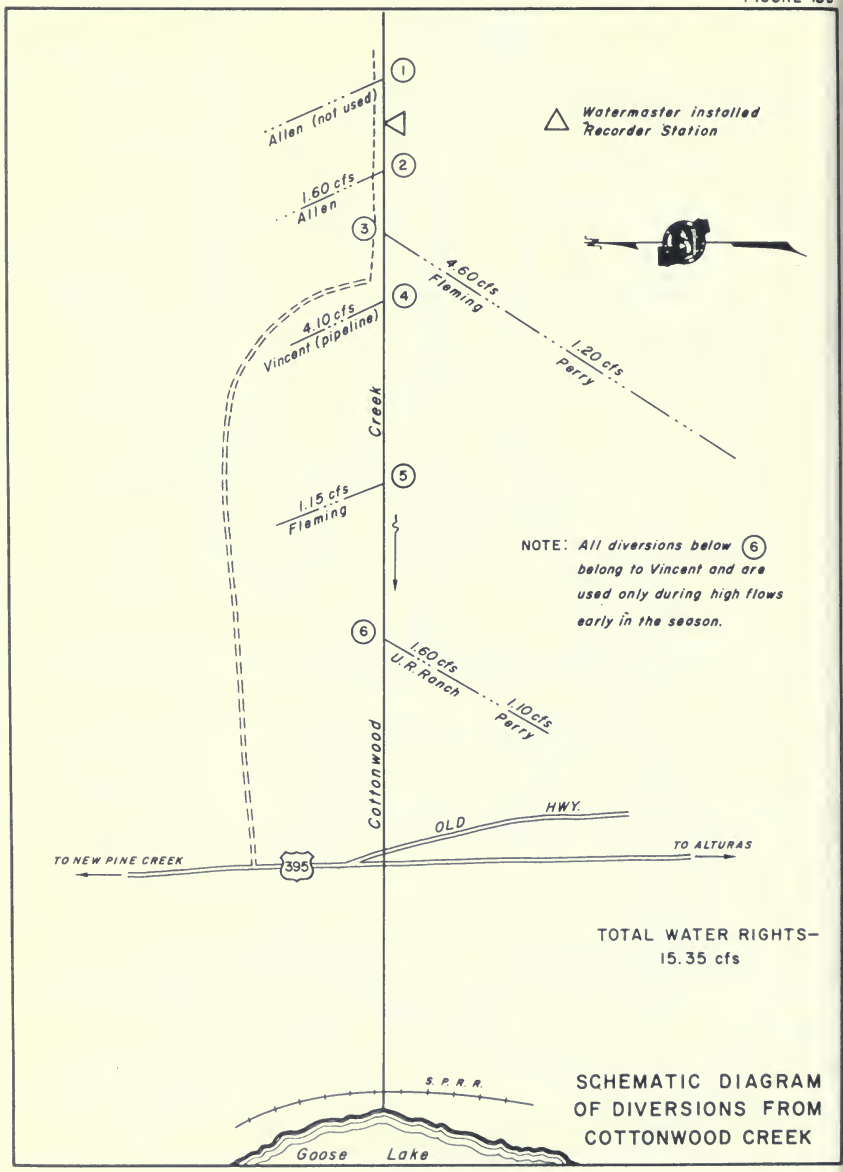
PARKER CREEK ABOVE HIGHWAY 395 NEAR ALTURAS

Day	March	April	May	June	July	August	September	Day
1								1
2								2
3								3
4								4
5								5
6								6
7								7
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15	NO RECORD AVAILABLE FOR 1970 SEASON							15
16								16
17								17
18								18
19								19
20								20
21								21
22								22
23								23
24								24
25								25
26								26
27								27
28								28
29								29
30								30
31								31
Mean								Mean
Runoff In Acre-Feet								Runoff In Acre-Feet


OREGON
CALIFORNIA
Goose
Lake
New
Pine
Creek
New
NEW PINE CREEK RD.
TO FORT
BIDWELL
Pine
Creek
Cottonwood Creek
FANDANGO PASS ROAD
TO SURPRISE
VALLEY
395
Davis Cr.
Davis
Creek
S.P.R.R.
Linville Creek
PIT RIVER
Fronklin Creek
JOSEPH CREEK BASIN ROAD
Joseph Creek
Couch Cr
Thoms
Creek
299
CEDAR
PASS
TO
CEDARVILLE
NORTH FORK
Gleason Creek
SCHEMATIC DIAGRAM
OF NORTH FORK PIT RIVER
WATERMASTER SERVICE AREA
TO CANBY
299
Alturas
PARKER
Parker Creek
Shields Creek
ROAD
Dorris Res.
SOUTH FORK
PIT RIVER
395

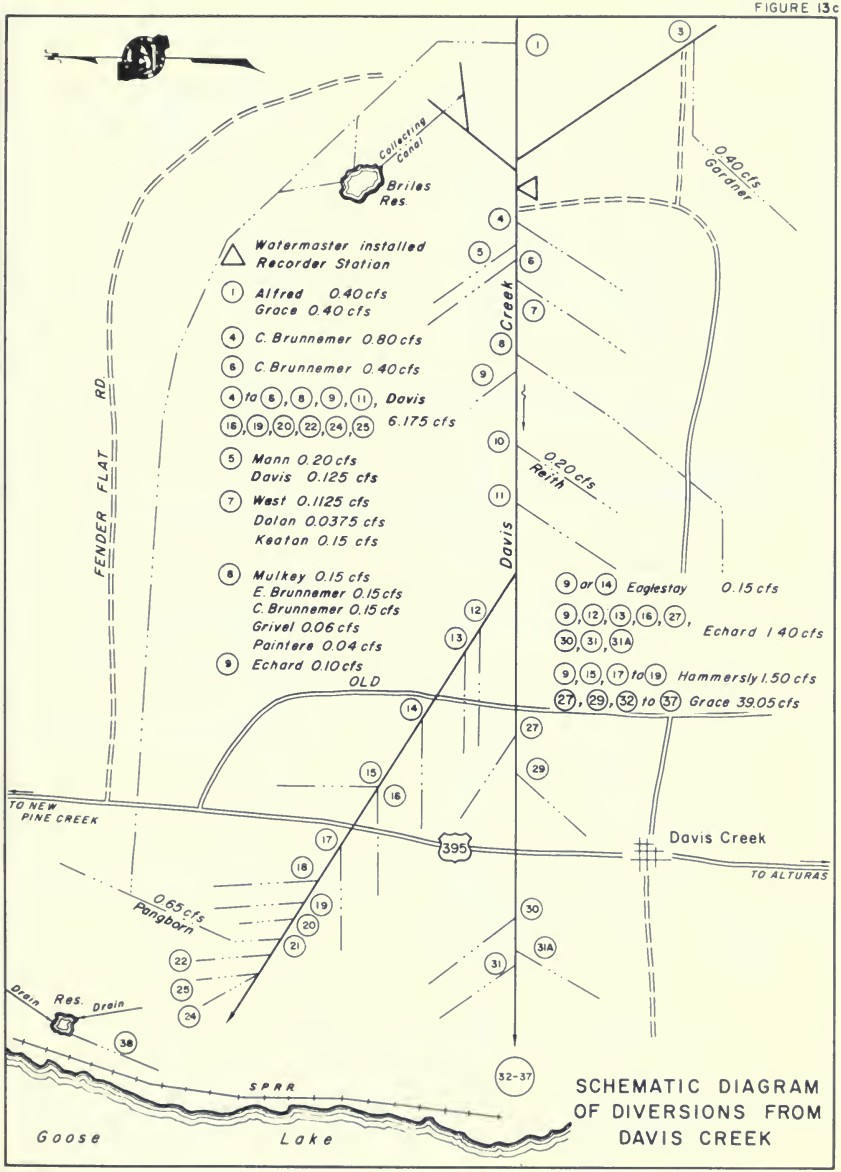


SCHEMATIC DIAGRAM OF DIVERSIONS FROM NEW PINE CREEK

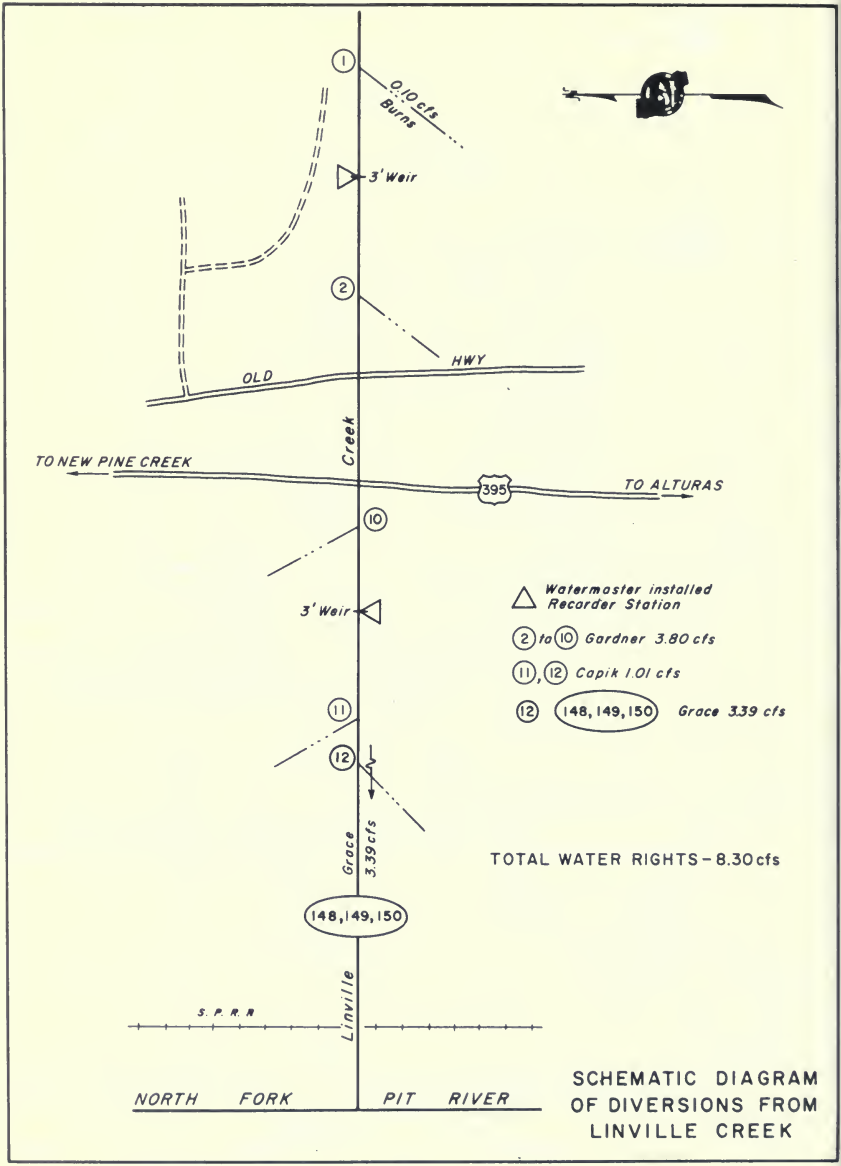


SCHEMATIC DIAGRAM OF DIVERSIONS FROM COTTONWOOD CREEK

FIGURE 13c



SCHEMATIC DIAGRAM OF DIVERSIONS FROM DAVIS CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM LINVILLE CREEK

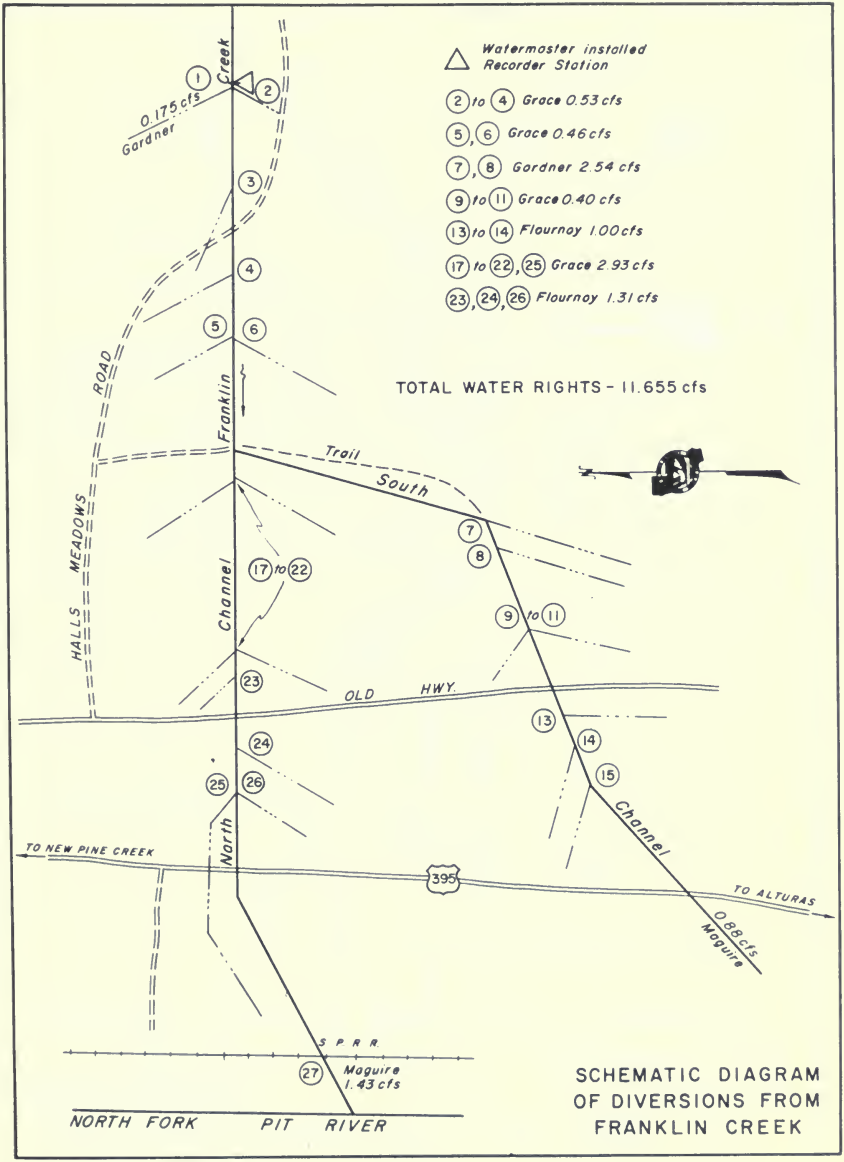
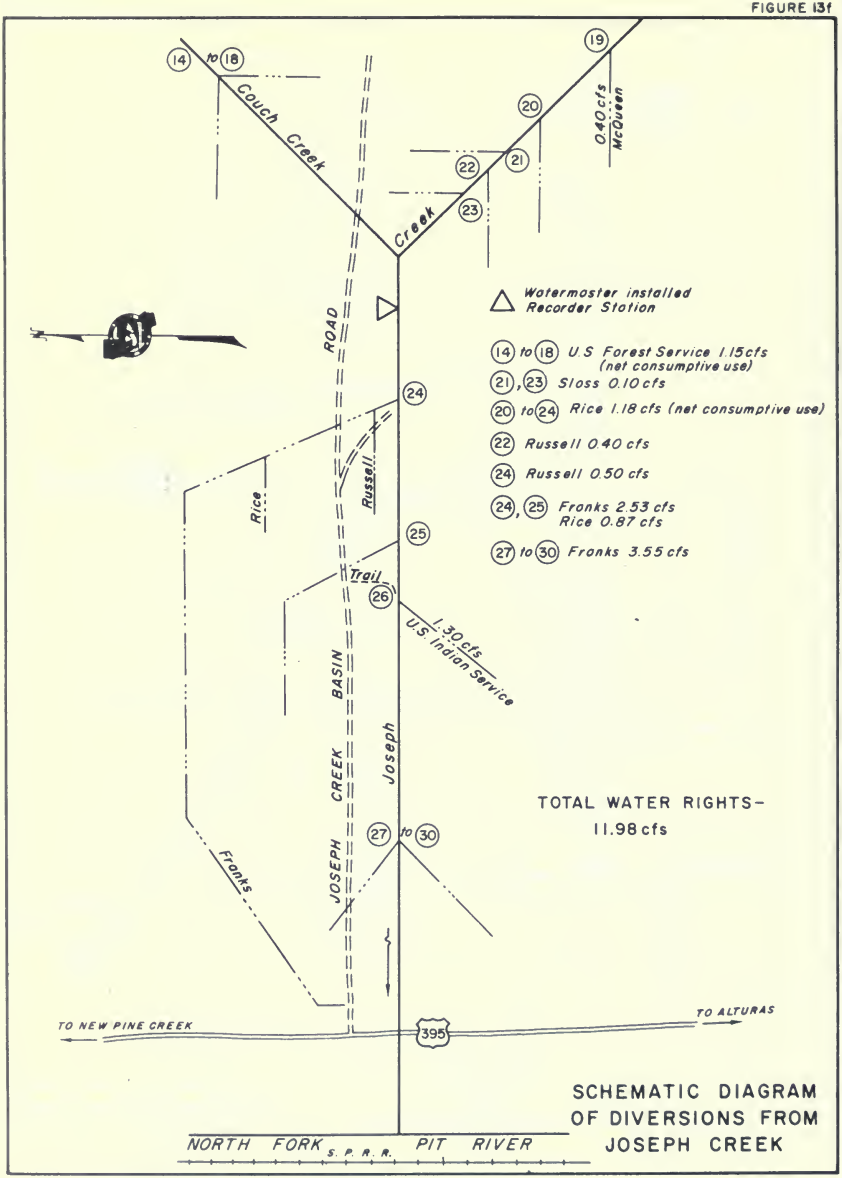

Watermaster installed Recorder Station
(2) to (4) Grace 0.53 cfs
(5), (6) Grace 0.46 cfs
(7), (8) Gardner 2.54 cfs
(9) to (11) Grace 0.40 cfs
(13) to (14) Flournoy 1.00 cfs
(17) to (22), (25) Grace 2.93 cfs
(23), (24), (26) Flournoy 1.31 cfs
TOTAL WATER RIGHTS - 11.655 cfs
0.175 cfs Gardner
Creek
Franklin
ROAD
HALLS MEADOWS
Channel
Trail
South
OLD HWY.
North
Channel
TO NEW PINE CREEK
395
TO ALTURAS
0.88 cfs Maguire
S P R R
(27) Maguire 1.43 cfs
NORTH FORK PIT RIVER
SCHEMATIC DIAGRAM OF DIVERSIONS FROM FRANKLIN CREEK

FIGURE 13f



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
JOSEPH CREEK

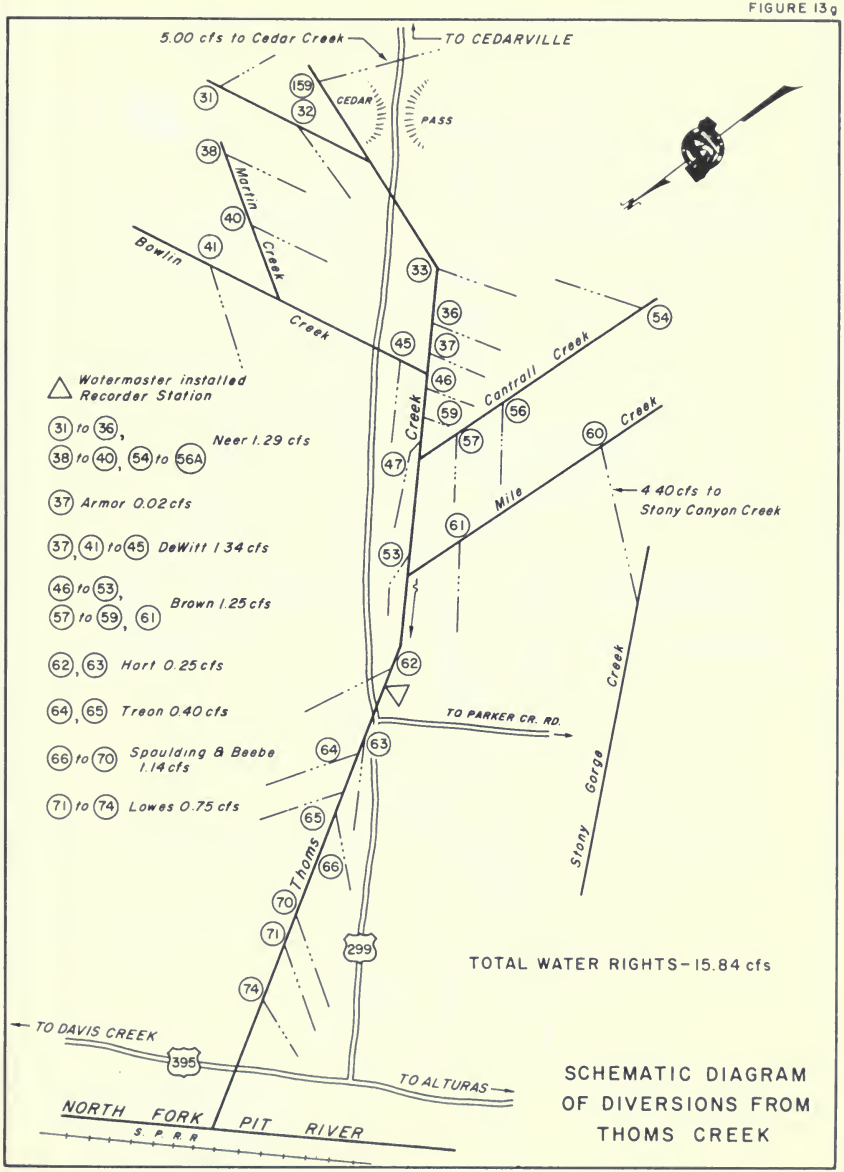
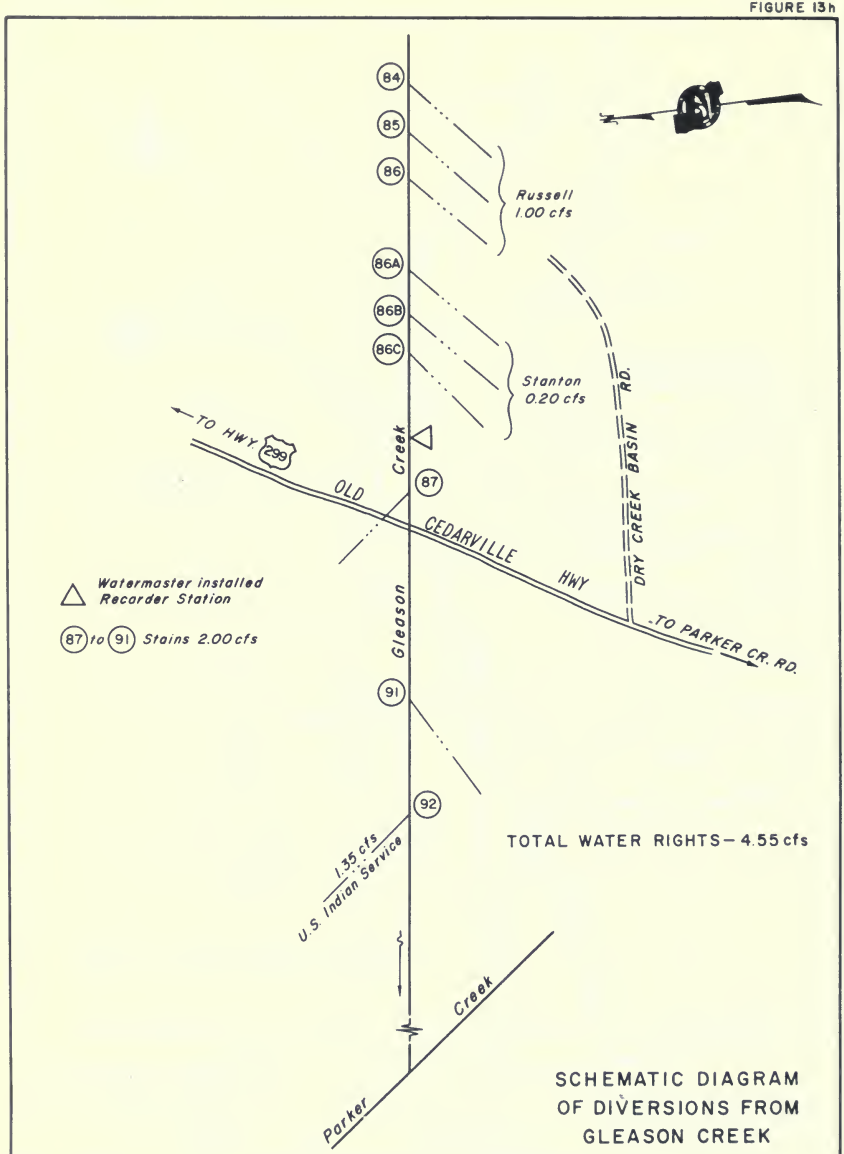

5.00 cfs to Cedar Creek
TO CEDARVILLE
CEDAR PASS
Martin Creek
Bowlin Creek
Cantrall Creek
Creek
Mile Creek
4.40 cfs to Stony Canyon Creek
Stony Gorge Creek
Thoms Creek
TO PARKER CR. RD.
299
TOTAL WATER RIGHTS - 15.84 cfs
TO DAVIS CREEK
395
TO ALTURAS
NORTH FORK PIT RIVER
S. P. R. R.
Watermaster installed Recorder Station
31 to 36, 38 to 40, 54 to 56A Neer 1.29 cfs
37 Armor 0.02 cfs
37, 41 to 45 DeWitt 1.34 cfs
46 to 53, 57 to 59, 61 Brown 1.25 cfs
62, 63 Hart 0.25 cfs
64, 65 Treon 0.40 cfs
66 to 70 Spaulding & Beebe 1.14 cfs
71 to 74 Lowes 0.75 cfs
SCHEMATIC DIAGRAM OF DIVERSIONS FROM THOMS CREEK

FIGURE 13h


84
85
86
Russell
1.00 cfs
86A
86B
86C
Stanton
0.20 cfs
DRY CREEK BASIN RD.
TO HWY 299
Creek
87
OLD CEDARVILLE HWY
TO PARKER CR. RD.
Watermaster installed
Recorder Station
87 to 91 Stains 2.00 cfs
Gleason
91
92
1.35 cfs
U.S. Indian Service
TOTAL WATER RIGHTS – 4.55 cfs
Creek
Parker
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
GLEASON CREEK

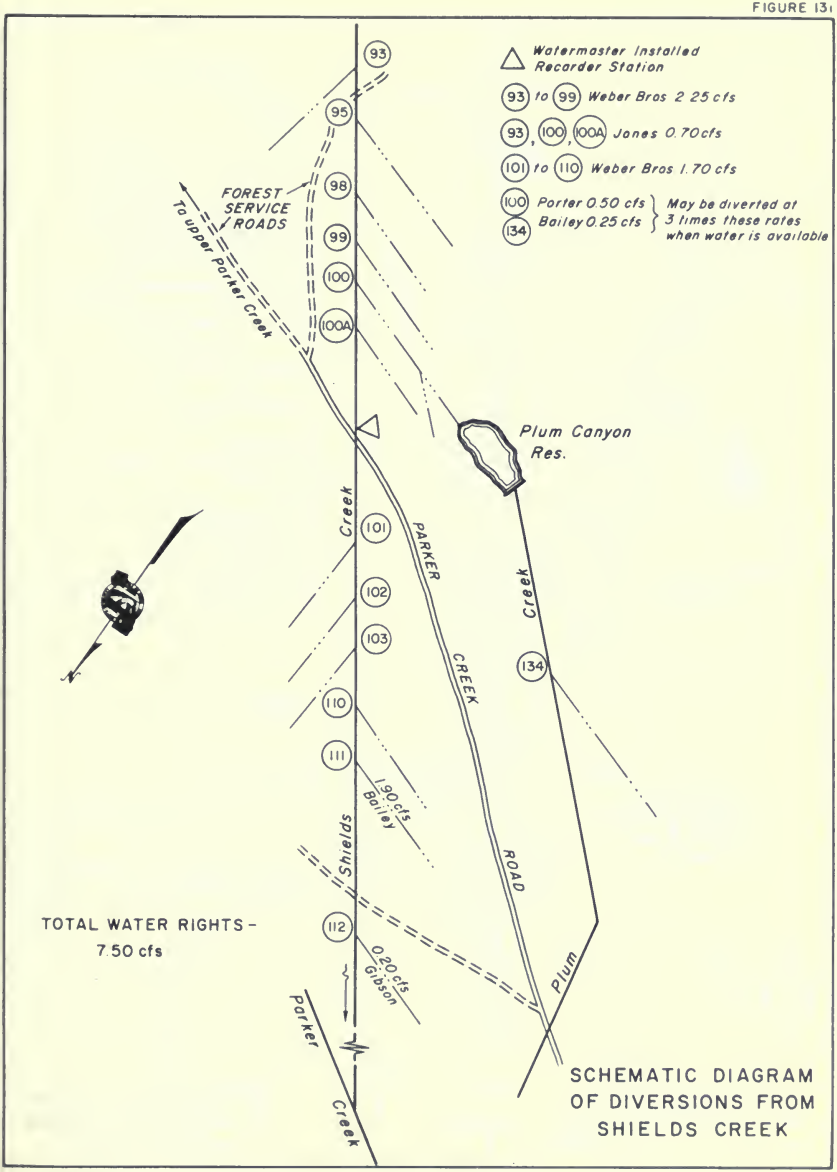
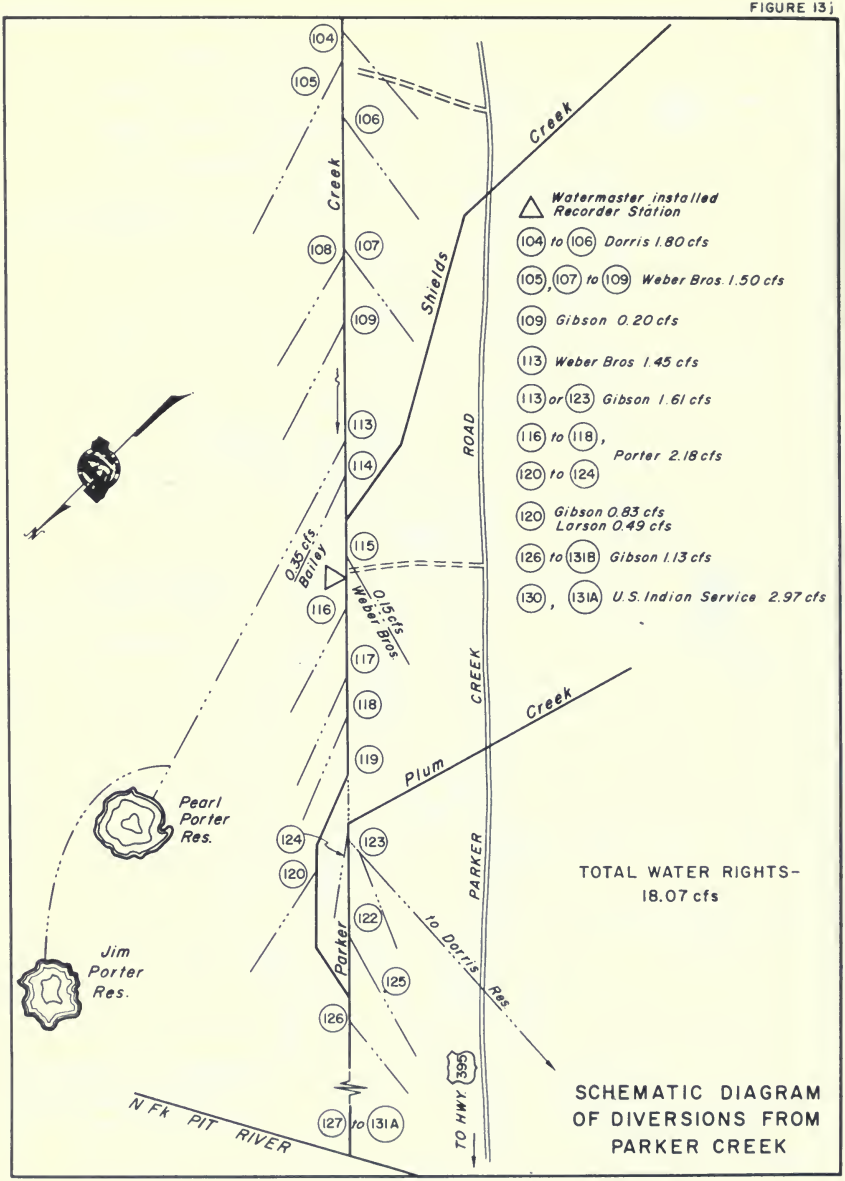
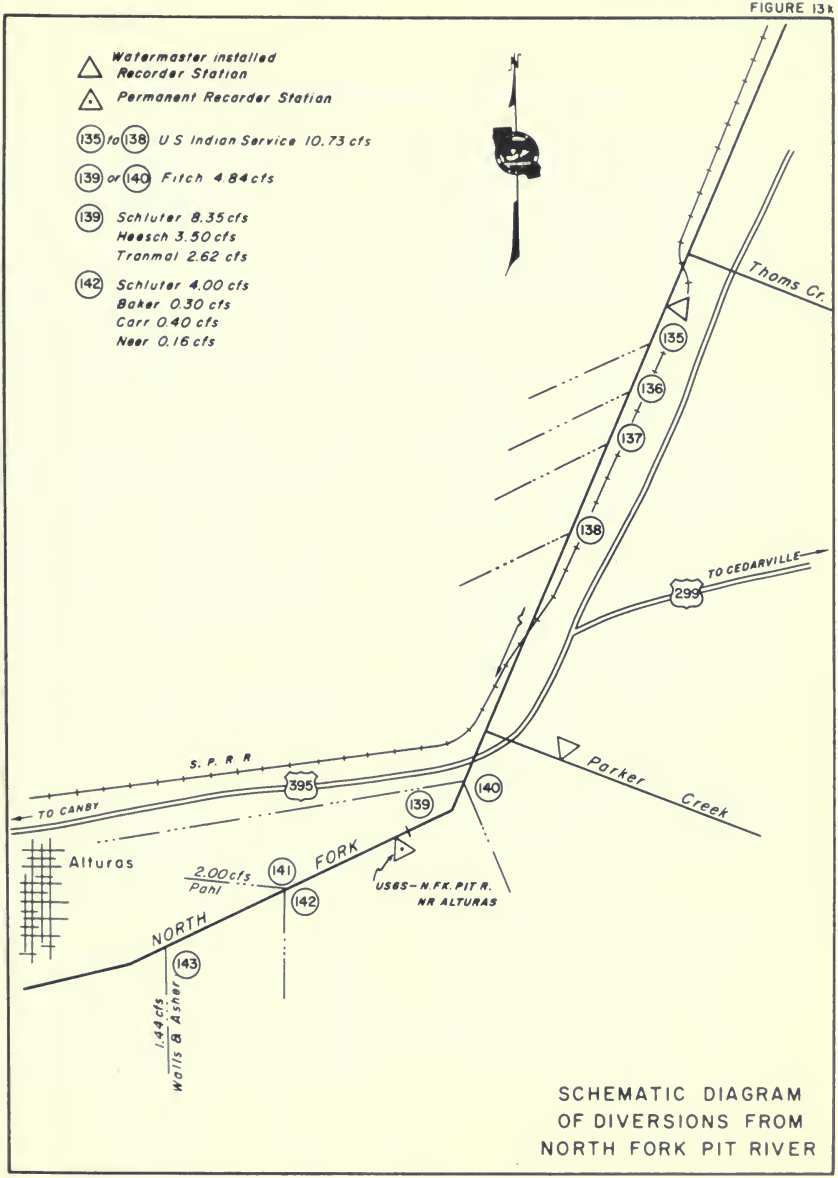

Watermaster Installed Recorder Station
93 to 99 Weber Bros. 2.25 cfs
93, 100, 100A Jones 0.70 cfs
101 to 110 Weber Bros. 1.70 cfs
100 Porter 0.50 cfs
134 Bailey 0.25 cfs
May be diverted at 3 times these rates when water is available
FOREST SERVICE ROADS
To upper Parker Creek
93
95
98
99
100
100A
Plum Canyon Res.
Creek
PARKER
CREEK
Creek
101
102
103
134
110
111
1.90 cfs Bailey
Shields
ROAD
Plum
112
0.20 cfs Gibson
Parker
Creek
TOTAL WATER RIGHTS - 7.50 cfs
SCHEMATIC DIAGRAM OF DIVERSIONS FROM SHIELDS CREEK

FIGURE 13j


104
105
106
107
108
109
113
114
115
116
117
118
119
120
122
123
124
125
126
127 to 131A
Creek
Shields
Creek
ROAD
CREEK
PARKER
Creek
Plum
Porter
0.35 cfs. Bailey
0.15 cfs. Weber Bros.
Pearl Porter Res.
Jim Porter Res.
to Dorris Res.
N Fk PIT RIVER
TO HWY 395
Watermaster installed Recorder Station
104 to 106 Dorris 1.80 cfs
105, 107 to 109 Weber Bros. 1.50 cfs
109 Gibson 0.20 cfs
113 Weber Bros 1.45 cfs
113 or 123 Gibson 1.61 cfs
116 to 118, 120 to 124 Porter 2.18 cfs
120 Gibson 0.83 cfs
Larson 0.49 cfs
126 to 131B Gibson 1.13 cfs
130, 131A U.S. Indion Service 2.97 cfs
TOTAL WATER RIGHTS- 18.07 cfs
SCHEMATIC DIAGRAM OF DIVERSIONS FROM PARKER CREEK



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
NORTH FORK PIT RIVER

Shackleford Creek Watermaster Service Area

The Shackleford Creek service area is located in western Siskiyou County near the town of Fort Jones in Scott Valley. There are 41 water right owners in the service area with total allotments of 64.73 cubic feet per second. The major sources of water supply for this service area are Shackleford Creek, which flows through the central part of Quartz Valley, and its tributary, Mill Creek, which rises east of the headwaters of Shackleford Creek. Evans Creek, a small tributary to Mill Creek, enters from the south.

The service area encompasses the Quartz Valley region of Scott Valley and includes the entire agricultural area within the Shackleford Creek Basin. It is about two miles wide by six miles long with the main axis and drainage running from south to north. Elevations on the agricultural area range from about 3,100 feet at the south to about 2,650 feet at the confluence of Shackleford Creek and Scott River.

A schematic drawing of the Shackleford Creek stream system is presented as Figures 14 and 14a, pages 88 and 89.

Water Supply

The water supply for Shackleford Creek is derived from snowmelt runoff, springs and seepage, and supplemental stored water released from Cliff Lake and Campbell Lake. These lakes are located near the headwaters of Shackleford Creek.

The watershed of the Shackleford Creek stream system contains about 31 square miles, located in the heavily forested, steep, mountainous terrain of the northeasterly slopes of the Salmon Mountains. It varies in elevation from about 7,000 feet along its west rim to about 3,000 feet at the foot of the slopes bordering Quartz Valley. Snowmelt runoff is normally sufficient to supply all demands until the middle of July. The supply then usually decreases until the first part of August when water is released from Cliff and Campbell Lakes to maintain sufficient flow for second priority allotments in the Shackleford Ditch.

Method of Distribution

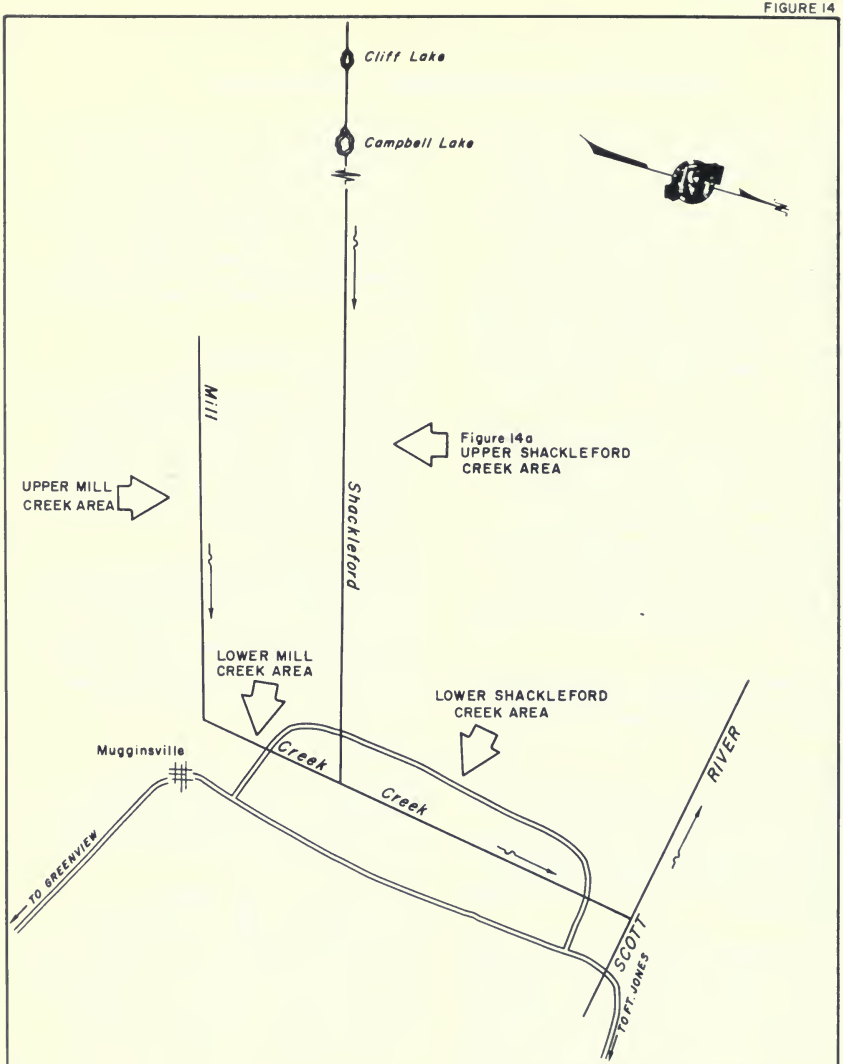
Irrigation is accomplished primarily by wild flooding of permanent pasture and alfalfa fields. Water is distributed by ditches and laterals to the places of use. Shackleford Ditch, the largest of these ditches, has a length of about 6 miles and a capacity of about 12 cubic feet per second.

The Shackleford Creek decree (see Table 1) provides four separate areas of distribution within the service area and establishes the following number of priority classes for these areas: Upper Shackleford Creek - seven; Lower Shackleford Creek - seven; Upper Mill Creek - three; and Lower Mill Creek - two.

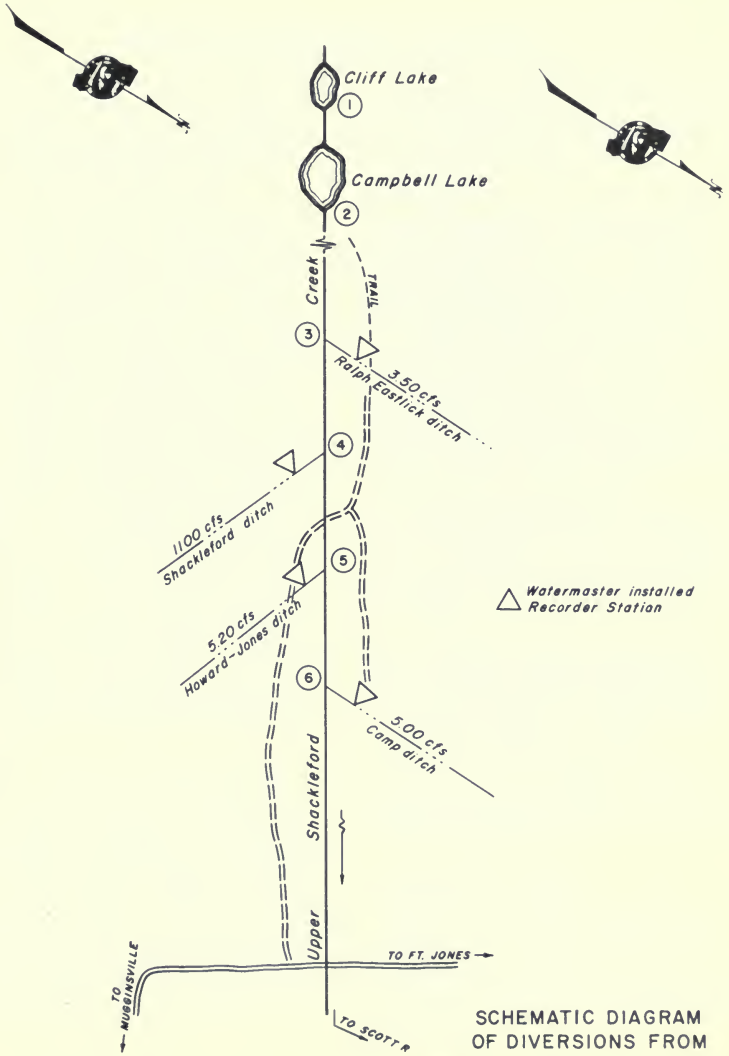
1970 Distribution

Watermaster service began June 1 in the Shackleford Creek service area and continued until September 30. John Nolan, Water Resources Technician II, was watermaster during this period.

The available water supply was above normal early in the season and about normal after August 1. Fourth priority water rights were shut off in early August. As flow continued to recede, third priorities were shut off late in August. After that there were only first and second priority allotments available through September in decreasing amounts.



SCHEMATIC DIAGRAM
OF SHACKLEFORD CREEK
WATERMASTER SERVICE AREA



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
UPPER SHACKLEFORD CREEK

Shasta River Watermaster Service Area

The Shasta River service area is located in the central part of Siskiyou County, south and east of the town of Yreka. There are 107 water right owners in the service area with total allotments of 594.612 cubic feet per second.

The source of water supply is Shasta River and its several tributaries. The upper reaches of the service area are served by two groups of tributaries. One group, comprising Boles, Beaughan, Carrick, and Jackson Creeks, rises on the northwestern slopes of Mount Shasta. The other group, consisting of Dale and Eddy Creeks, and Shasta River west of U. S. Highway 99, rises on the eastern slopes of the Trinity Mountains. All these streams join the main stem Shasta River above Dwinnell Reservoir near the town of Weed. As the Shasta River flows northward from Dwinnell Reservoir to its confluence with the Klamath River, north of Yreka, it is joined by three major tributaries. Parks Creek, rising on the eastern slopes of the Trinity Mountains, enters from the west near the town of Gazelle. Big Springs Creek, from Big Springs Lake, enters from the east about a mile below Parks Creek. Little Shasta River, rising on the western slopes of the mountainous area between Butte Valley and Shasta Valley, enters from the east near the town of Montague.

The place of use is in Shasta Valley which is approximately 30 miles long and 30 miles wide. The valley has numerous small, coneshaped, volcanic hillocks scattered throughout its central portion that produce the effect of dividing the area into a number of distinctively separate parts. Because of these formations only about 141,000 acres of the approximately 507,000 acres within the valley are irrigable. The valley floor elevation averages approximately 3,000 feet.

A schematic drawing of each major stream system within the Shasta River service area is presented as Figures 15 through 15i, pages 99 through 108.

Water Supply

The water supply for Shasta Valley is derived from snowmelt runoff, springs and underground flow, and occasional summer thundershowers. In several portions of the stream system the spring and underground flow is adequate to supply most allotments throughout the season. Much of the underground flow is derived from the northern slopes of Mount Shasta, which rises to an elevation of 14,162 feet at the south end of Shasta Valley. Although the snowpack on Mount Shasta is usually heavy, there is negligible surface runoff.

Parks Creek, Upper Shasta River, and Little Shasta River derive a major portion of their water supply from snowmelt runoff. This flow is usually adequate to supply all allotments until the middle of May.

Beaughan Creek, Carrick Creek, Shasta River from Boles Creek to Dwinnell Reservoir, Big Springs, and Lower Shasta River have enough runoff from springs to supply a large percentage of the allotments throughout the season.

Records of the daily mean discharge at several stream gaging stations in the Shasta River service area are presented in Tables 31 through 37.

Method of Distribution

Irrigation of permanent pasture and alfalfa lands is accomplished principally by wild flooding. Much of the return water is recaptured and used on lower pasture lands. Sprinkling systems are used for irrigating some alfalfa and grain lands.

Water is diverted primarily by diversion dams and then conveyed by ditch or canal to the place of use. The largest and longest canal in the area is the Edson-Foulke Yreka Ditch, which has a capacity of about 60 cubic feet per second and a length of about 15 miles. Water is also supplied into ditch systems by pumped diversions. The largest of these belong to three irrigation districts. Several riparian water right owners also use pump diversions.

Many privately owned storage reservoirs exist in the area. Water storage from these reservoirs is used to supplement continuous-flow allotments.

The Shasta River decree (see Table 1) provides eight separate areas of distribution within the service area. This decree established the following number of priority classes for these areas: Shasta River above the confluence with Big Springs Creek - 43; Jackson Creek - 7; Parks Creek - 25; Shasta River below the confluence with Big Springs Creek - 29; and Little Shasta River - 7.

Three privately operated water districts within the service area have main diversions which are under supervision of the watermaster. These are: Shasta River Water Users Association, Grenada Irrigation District, and Big Springs Irrigation District. A fourth, the Montague Water Conservation District, stores water in Dwinnell Reservoir for use by the District and by natural flow water right owners immediately below the dam. The watermaster is responsible for diversion to these users.

A number of riparian water users along the Lower Shasta River were not included in the Shasta River decree. Owners of these undefined water rights are therefore not subject to watermaster supervision; consequently, in seasons of short supply these rights can be the cause of many water distribution problems.

1970 Distribution

Watermaster service began April 1 in the Shasta River service area and continued through September 30. John A. Nolan, Water Resources Technician II, was watermaster during this period.

The available water supply in the service area was generally about average during the season.

Parks Creek. The flow in Parks Creek was sufficient to supply all allotments (25 priorities) until mid-June. Some water continued to be diverted into the Yreka Ditch until early August. The first priority allotments of 6 cubic feet per second were available until August 15, after which first priority allotments were available in decreasing amounts for the remainder of the season. Water users downstream from the lowest first priority diversion received a portion of their allotments during the latter part of the season from return flow and from water rising in the gravel streambed.

Upper Shasta River. During early spring enough water was available to satisfy all allotments (eight priorities). As the flow decreased, the following levels of priority allotments were met: June 13 - all of fourth priority; July 1 - all of third priority (Yreka Ditch main allotment); and August 16 (the seasonal low) - 12 percent of third priority.

Shasta River from Boles Creek to Dwinnell Reservoir. Boles Creek and Shasta River from Boles Creek to Dwinnell Reservoir were operated as one stream, under a long-standing oral agreement among the water right owners, with water being distributed on an equal and correlative basis. Adequate water was available to satisfy all allotments until the middle of August. All diversions were then cut to 65 percent. In mid-September

the flow increased to again allow diversion of 100 percent of allotments.

Beaughan Creek. The flow of Beaughan Creek was sufficient to satisfy most demands (five priorities) for the entire season. The creek is routed through a mill pond owned by the International Paper Company which uses approximately 35 percent of the flow for industrial purposes.

Carrick Creek. The water supply in Carrick Creek was adequate to satisfy all allotments (13 priorities) during the entire season.

Little Shasta River. Enough water was available in Little Shasta River to satisfy all fifth priority allotments (seven priorities) until late May. After that date, close regulation became necessary to adequately distribute this priority. The flow continued to decrease to approximately 50 percent of the fourth priority allotments by the end of August. It then stayed constant for the remainder of the season.

The daily mean discharge of Little Shasta River near Montague is presented in Table 35, page 97. This runoff is augmented by rising water along the river channel, and by substantial inflow from Cleland Springs, a tributary approximately 2 miles below the stream gaging station. Therefore, considerably more water is available for distribution at downstream diversion points than is indicated in the discharge table.

Dwinnell Reservoir. Releases from Dwinnell Reservoir to the Montague Water Conservation District commenced on April 8 and continued into October. Reservoir operation data from the 1970 season are shown in Tables 33 and 34, pages 96 and 97.

By agreement with the Montague Water Conservation District, water users on Shasta River below Dwinnell Reservoir received stored water from the reservoir on demand in lieu of their natural flow rights. The agreement allotment totals and the amount delivered to each user this season are shown in the tabulation below.

DELIVERIES TO NATURAL FLOW WATER RIGHT OWNERS
BELOW DWINNELL RESERVOIR - 1970

Name of Water Right Owner	Allotment in Acre-Feet	Allotment Delivered from Dwinnell Reservoir	
		Acre-feet	% of Allotment
Flying L Ranch	198	-0-	-0-
Frank Ayers	464	418	90
J. N. Taylor	1,200	1,200	100
W. W. Valentine:			
Hole-in-the Ground Ranch	596	124	21
Seldom Seen Ranch	924	924	100
Totals	3,382	2,666	79

Big Springs. The flow of Big Springs was sufficient to satisfy approximately 50 percent of third priority allotments through the first half of the season. Usually during July, August, and September, the flow in Big Springs increases as snowmelt from higher elevations on Mount Shasta percolates into the ground and reappears as surface flow at Big Springs Lake. As a result, Big Springs Irrigation District, a third priority water right owner, was able to pump its full allotment from early August through the remainder of the season.

Lower Shasta River. The water supply in Lower Shasta River was sufficient to satisfy all allotments (29 priorities) for almost the entire season. However, during July, August, and September, close regulation was necessary to adequately distribute the flow to the first priority water right owners at the lower end of the river. On numerous occasions the available flow was insufficient to supply all priorities.

SHASTA RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 31

SHASTA RIVER AT EDGEWOOD

Day	March	April	May	June	July	August	September	Day
1	162	58	28	95	21	5.4	3.8	1
2	155	53	27	92	20	5.7	4.1	2
3	147	51	26	90	18	5.1	4.3	3
4	147	51	25	94	18	5.1	5.1	4
5	142	44	25	88	18	4.8	6.0	5
6	142	38	24	81	16	4.8	7.0	6
7	138	28	24	80	16	4.6	7.0	7
8	138	26	23	72	15	4.6	7.0	8
9	133	26	22	61	15	5.1	6.4	9
10	131	27	22	53	14	5.1	6.0	10
11	131	27	26	46	14	4.8	6.4	11
12	126	26	27	47	13	3.8	6.4	12
13	124	25	25	46	13	3.6	6.0	13
14	124	21	26	44	13	3.8	6.7	14
15	126	22	26	43	12	3.8	7.8	15
16	122	20	26	39	11	3.8	7.8	16
17	124	19	25	35	11	4.1	7.4	17
18	122	22	26	35	11	4.1	6.7	18
19	124	35	24	32	9.4	4.1	7.0	19
20	122	52	26	31	8.9	4.6	7.8	20
21	126	40	31	32	8.9	4.1	7.8	21
22	117	44	33	31	8.8	3.8	7.4	22
23	117	42	47	30	8.5	4.1	7.0	23
24	115	43	42	29	7.8	4.3	7.0	24
25	113	36	41	26	7.6	4.1	7.8	25
26	109	32	35	25	7.8	4.1	8.5	26
27	107	31	38	26	7.4	4.1	8.5	27
28	107	32	44	25	6.7	3.8	8.9	28
29	90	29	55	25	6.1	3.4	8.9	29
30	78	32	81	23	5.7	3.6	9.8	30
31	66		99		5.7	3.6		31
Mean	123	34.4	33.6	49.2	11.0	4.3	6.9	Mean
Runoff In Acre-Feet	7590	2050	2080	2930	728	265	413	Runoff In Acre-Feet

TABLE 32

PARKS CREEK ABOVE EDSON-FOULKE YREKA DITCH

Day	March	April	May	June	July	August	September	Day
1			8.3*	24	15	9.5	5.0	1
2			11	25	14	9.6	4.7	2
3			14	26	14	9.8	4.3	3
4			19	25	14	9.6	4.3	4
5			21	25	13	9.6	5.0	5
6			18	24	12	9.6	5.3	6
7			17	23	11	9.3	5.0	7
8			18	24	11	9.0	4.7	8
9			18	23	11	9.0	4.3	9
10			16	22	11	8.8	3.7	10
11			15	22	10	8.8	3.7	11
12			13	21	10	8.3	3.2	12
13			12	22	10	6.6	2.7	13
14			20	23	10	6.2	2.3	14
15			23	20	10	6.2	2.3	15
16			27	19	10	5.9	2.3	16
17			31	18	10	5.5	2.7	17
18			32	18	10	5.5	2.7	18
19			30	17	10	5.5	3.7	19
20			29	17	10	5.5	3.7	20
21			27	17	9.8	5.3	3.7	21
22			26	17	9.8	5.3	4.3	22
23			28	16	10	5.3	4.7	23
24			27	16	9.9	5.3	4.7	24
25			26	16	9.8	5.3	4.7	25
26			29	15	9.8	5.0	4.7	26
27			28	15	9.6	5.0	5.0	27
28			27	16	9.6	5.0	5.0	28
29			26	16	9.6	5.0	5.0	29
30			25	15	9.5	5.0	5.0	30
31			24		9.5	5.0		31
Mean			22.2	19.9	10.7	6.9	4.1	Mean
Runoff In Acre-Feet			1370	1180	661	426	243	Runoff In Acre-Feet

* Beginning of Record

SHASTA RIVER WATERMASTER SERVICE AREA
October 1, 1969 through September 30, 1970 (in acre-feet)

TABLE 33
DAILY MEAN STORAGE IN DWINNELL RESERVOIR

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Day
1	20,070	19,310	20,800	32,290	46,240	46,780	49,750	43,630	39,880	34,070	25,700	17,800	1
2	19,930	19,330	20,830	32,380	46,280	46,850	49,710	43,450	39,510	33,820	25,400	17,610	2
3	19,820	19,340	20,840	32,480	46,380	46,980	49,620	43,270	39,340	33,560	25,180	17,410	3
4	19,850	19,370	20,870	32,530	46,530	49,080	49,550	43,090	39,170	33,310	24,950	17,220	4
5	19,540	19,540	20,880	32,580	46,650	49,210	49,430	42,910	39,080	33,050	24,730	17,020	5
6	19,400	19,810	20,900	32,640	46,730	49,300	49,320	42,740	39,000	32,750	24,350	16,890	6
7	19,260	19,680	20,940	32,720	46,780	49,390	49,190	42,610	38,870	32,480	24,130	16,700	7
8	19,150	19,980	20,980	32,880	46,830	49,570	48,900	42,490	38,920	32,180	23,830	16,520	8
9	19,120	20,100	21,010	33,280	46,890	49,620	48,610	42,400	38,830	31,870	23,600	16,400	9
10	19,120	20,180	21,080	33,900	46,920	49,640	48,450	42,320	38,660	31,520	23,320	16,220	10
11	19,090	20,240	21,300	34,210	46,960	49,620	48,200	42,290	38,460	31,280	23,110	16,040	11
12	19,020	20,280	21,860	34,410	47,170	48,570	47,950	42,230	38,240	30,980	22,900	15,860	12
13	19,020	20,320	22,410	34,720	47,420	49,530	47,770	42,080	38,070	30,720	22,820	15,680	13
14	19,010	20,380	22,860	35,350	47,590	49,550	47,590	41,810	38,040	30,400	22,410	15,500	14
15	18,980	20,420	23,320	35,980	47,680	49,570	47,410	41,590	37,900	30,180	22,130	15,260	15
16	19,050	20,460	23,530	36,820	47,880	49,570	47,230	41,420	37,730	29,840	21,850	15,080	16
17	19,090	20,490	23,680	37,270	47,860	49,570	46,980	41,300	37,470	29,600	21,640	14,900	17
18	19,120	20,520	23,850	37,700	47,860	49,570	46,780	41,250	37,300	29,230	21,360	14,720	18
19	19,150	20,550	24,350	38,070	47,950	49,610	46,510	41,130	37,050	29,080	21,150	14,540	19
20	19,160	20,570	25,400	38,410	48,040	49,620	46,240	41,040	36,790	28,850	20,940	14,420	20
21	19,170	20,590	27,950	38,870	48,090	49,680	46,080	40,960	36,620	28,600	20,880	14,300	21
22	19,170	20,620	29,480	40,020	48,130	49,710	45,790	40,840	36,370	28,330	20,380	14,190	22
23	19,170	20,630	30,130	41,890	48,160	49,750	45,810	40,700	36,200	28,030	20,100	14,080	23
24	19,160	20,670	30,590	43,990	48,220	49,790	45,340	40,820	35,940	27,800	19,890	13,970	24
25	19,160	20,700	30,960	44,820	48,270	49,800	45,070	40,530	35,680	27,500	19,610	13,920	25
26	19,160	20,730	31,330	44,980	48,350	49,840	44,890	40,450	35,350	27,280	19,330	13,810	26
27	19,170	20,760	31,580	48,060	48,450	49,840	44,530	40,380	35,090	26,980	19,050	13,750	27
28	19,200	20,770	31,780	48,060	48,580	49,840	44,350	40,330	34,810	26,700	18,840	13,640	28
29	19,220	20,770	31,920	48,150		49,840	44,080	40,190	34,580	26,450	18,580	13,480	29
30	19,260	20,770	32,030	48,150		49,820	43,900	40,080	34,330	26,150	18,280	13,310	30
31	19,290		32,190	48,200		49,790		39,940		25,930	18,070		31

SHASTA RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 34

GWINNELL RESERVOIR

Day	April	May	June	July	August	September	October	Day
1		63	71	77	78	79	34	1
2		61	80	77	78	77	32	2
3		57	80	77	78	71	33	3
4		52	80	77	78	67	34	4
5		56	76	76	82	58	31	5
6		61	69	78	82	55	29	6
7		63	58	78	82	55	30	7
8	49*	63	52	83	81	55	28	8
9	49	58	53	83	83	56	26	9
10	49	51	57	83	81	56	25	10
11	49	42	66	82	81	61	25	11
12	50	34	70	82	81	64	26	12
13	50	34	70	82	82	71	26	13
14	52	42	62	78	82	82	26	14
15	64	61	57	75	81	83	22	15
16	75	61	64	75	81	83	18	16
17	71	61	71	75	81	83	5**	17
18	71	63	73	75	78	80		18
19	71	67	75	72	75	67		19
20	71	67	77	70	75	56		20
21	71	67	77	75	75	42		21
22	67	67	77	75	80	39		22
23	64	67	77	78	78	42		23
24	66	67	79	79	79	33		24
25	66	67	83	79	79	24		25
26	70	67	83	80	81	23		26
27	74	67	86	83	83	23		27
28	70	67	86	83	81	23		28
29	69	67	79	83	81	29		29
30	65	66	77	83	80	35		30
31		64		80	80			31
Mean	63.2	59.7	72.3	78.5	79.9	55.7	26.3	Mean
Runoff In Acre-Feet	2880	3670	4300	4830	4920	3320	880	Runoff In Acre-Feet

* Beginning of Record
** End of Record

TABLE 35

LITTLE SHASTA RIVER NEAR MONTAGUE

Day	March	April	May	June	July	August	September	Day
1	22	20	25	28	10	6.4	5.0	1
2	21	21	26	27	9.4	6.4	5.1	2
3	21	20	31	26	9.0	6.2	5.0	3
4	20	21	33	25	8.8	6.2	5.2	4
5	18	22	33	23	8.7	6.1	5.3	5
6	26	24	31	24	8.6	6.0	5.5	6
7	62	22	32	22	8.2	6.0	5.3	7
8	63	21	41	23	7.8	5.9	5.1	8
9	44	23	41	24	7.8	5.8	5.0	9
10	36	31	40	25	7.6	5.8	5.0	10
11	35	27	38	20	7.7	5.7	4.9	11
12	35	24	40	19	7.7	5.6	4.8	12
13	37	25	41	23	7.5	5.5	4.8	13
14	45	25	40	20	7.4	5.5	4.8	14
15	40	24	40	17	7.2	5.3	4.8	15
16	36	24	40	16	7.1	5.3	4.8	16
17	33	22	41	15	7.0	5.2	4.7	17
18	28	22	42	14	7.2	5.2	4.7	18
19	27	27	42	14	7.2	5.2	4.7	19
20	26	24	41	13	7.0	5.2	4.6	20
21	25	23	40	13	7.0	5.1	4.5	21
22	25	22	39	14	7.0	5.1	4.5	22
23	25	23	38	12	6.8	5.1	4.5	23
24	25	23	37	12	6.6	5.1	4.5	24
25	25	22	36	11	6.5	5.0	4.4	25
26	25	23	36	11	6.5	5.0	4.4	26
27	23	23	35	11	6.6	5.0	4.3	27
28	23	23	34	14	6.7	5.0	4.2	28
29	23	21	33	12	6.4	5.0	4.2	29
30	21	23	31	11	6.4	5.0	4.2	30
31	20		30		6.4	5.0		31
Mean	30.2	23.2	36.4	18.0	7.5	5.5	4.8	Mean
Runoff In Acre-Feet	1860	1380	2240	1070	460	337	283	Runoff In Acre-Feet

SHASTA RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 38

SHASTA RIVER AT MONTAGUE-GRENADA HIGHWAY BRIDGE

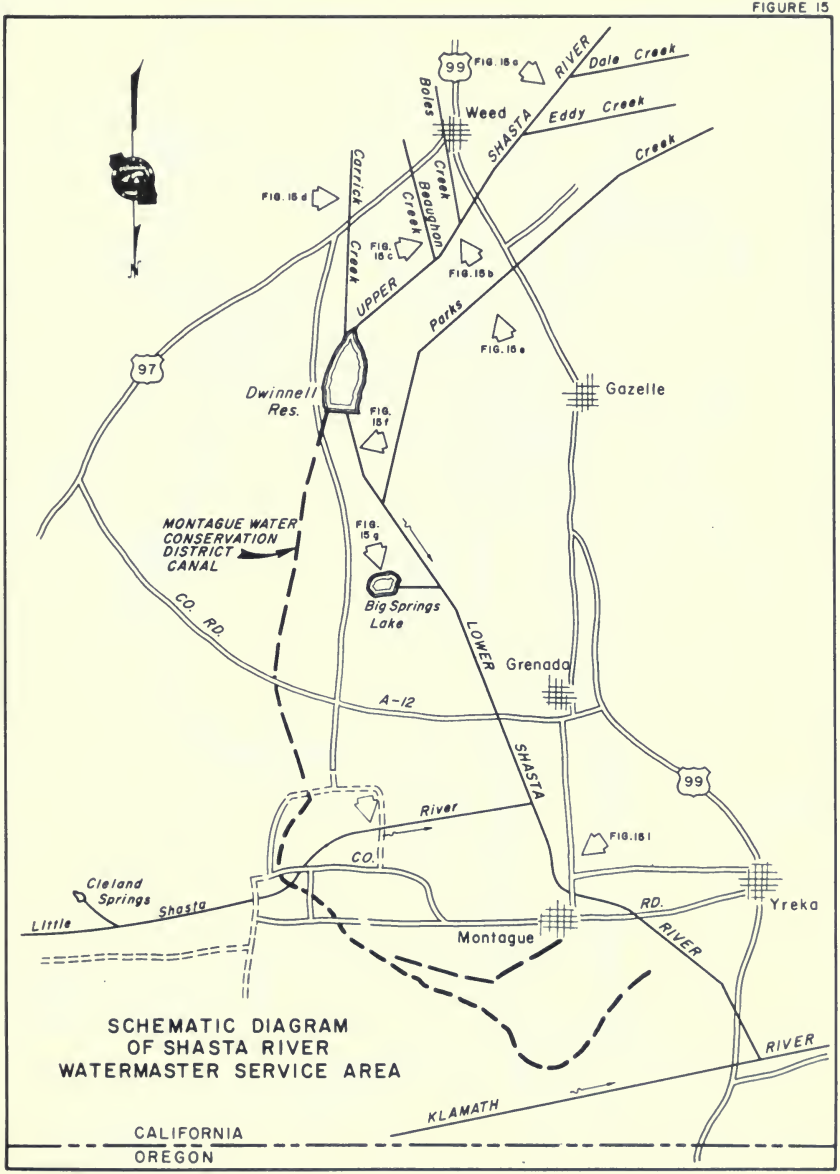
Day	March	April	May	June	July	August	September	Day
1			121	110	89	23	8.0	1
2			130	87	39	21	30	2
3			121	75	37	33	32	3
4			105	64	31	28	41	4
5		110*	89	82	48	23	84	5
6		106	92	84	73	21	58	6
7		108	93	84	52	28	61	7
8		100	101	82	41	30	50	8
9		93	95	84	41	28	29	9
10		97	116	87	33	23	28	10
11		86	135	58	30	21	23	11
12		90	137	50	30	17	21	12
13		96	137	88	29	8.2	21	13
14		109	124	87	21	7.4	35	14
15		125	109	87	23	17	37	15
16		121	101	82	8.2	20	37	16
17		125	89	82	17	17	37	17
18		116	89	75	14	21	46	18
19		104	99	79	19	28	47	19
20		101	104	78	26	29	44	20
21		104	95	72	17	35	37	21
22		111	90	79	44	28	52	22
23		101	92	66	26	17	52	23
24		96	96	82	9.9	12	50	24
25		103	95	79	7.4	13	52	25
26		108	81	80	9.9	23	66	26
27		116	82	59	16	26	79	27
28		105	94	72	17	16	99	28
29		111	104	79	17	21	96	29
30		121	100	78	12	20	104	30
31			102		25	9.9		31
Mean		92.1	104	72.9	28.4	21.3	47.7	Mean
Runoff In Acre-Feet		5480	6380	4340	1750	1310	2840	Runoff In Acre-Feet

* Beginning of Record

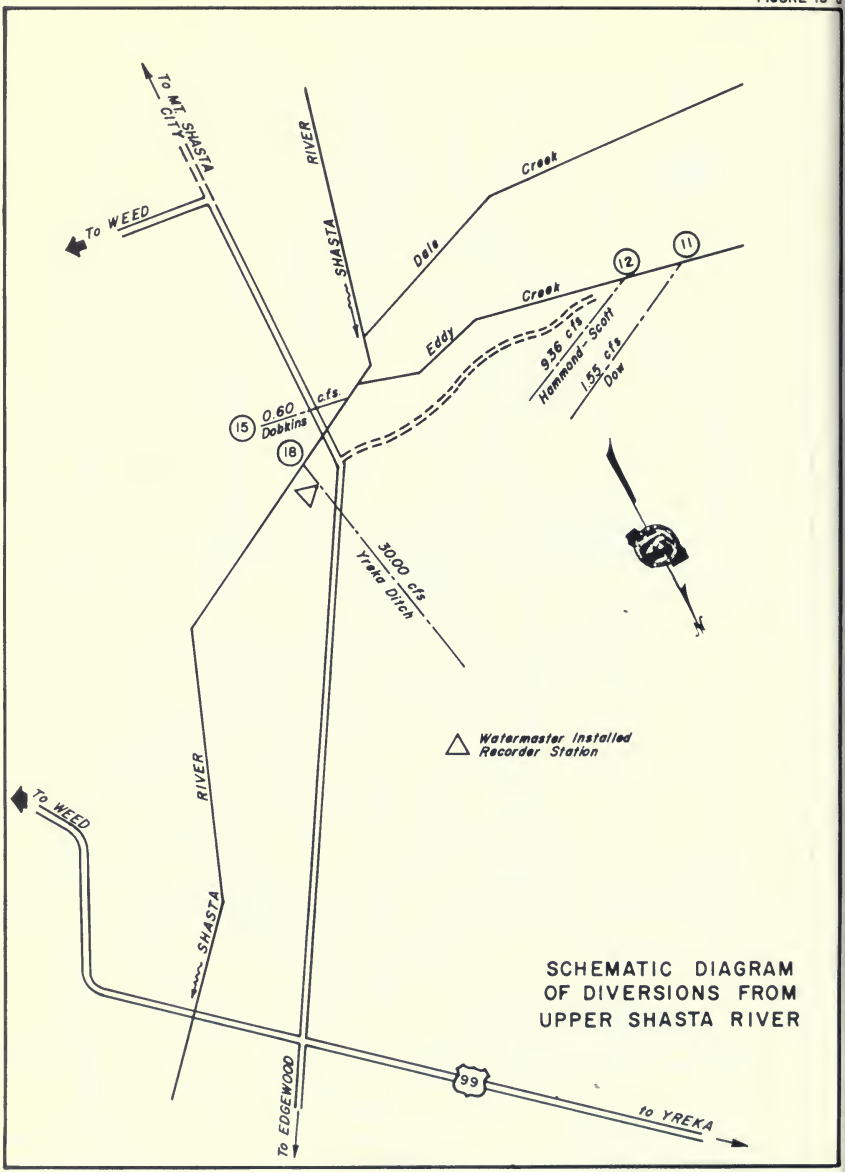
TABLE 37

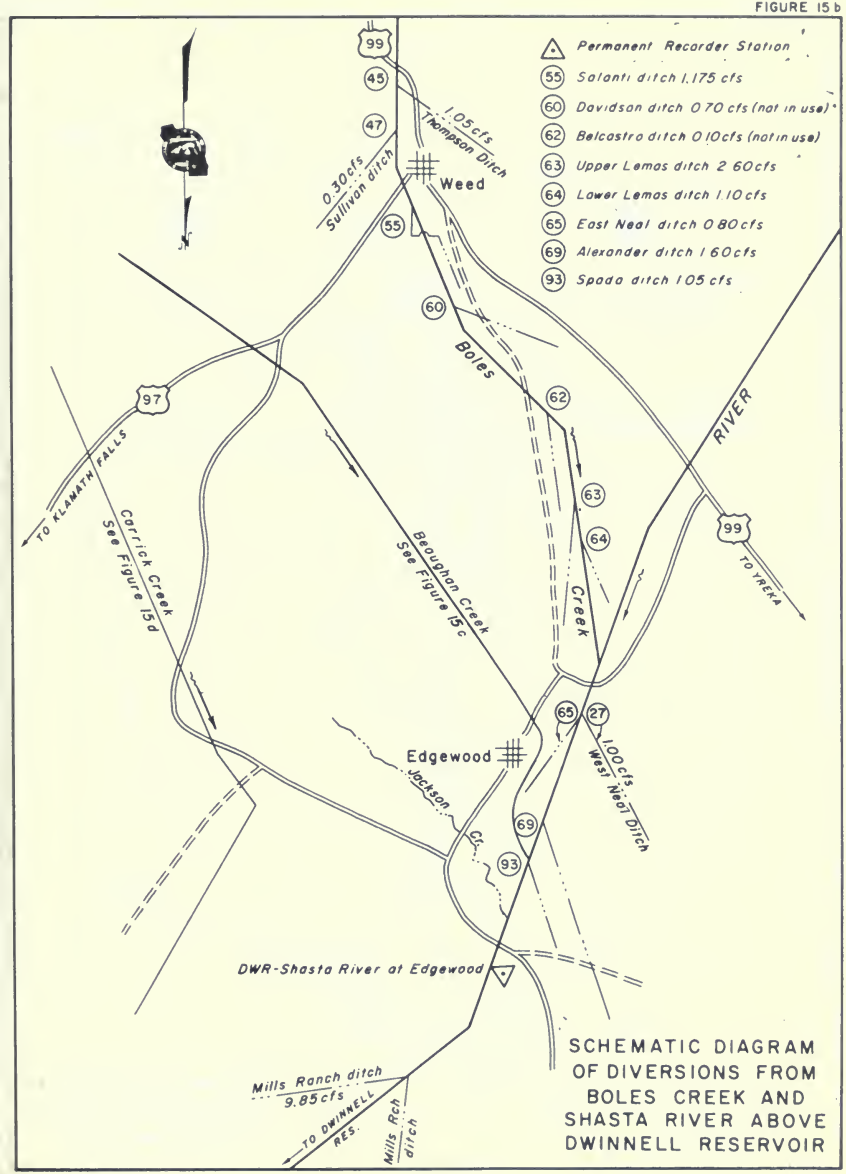
SHASTA RIVER NEAR YREKA

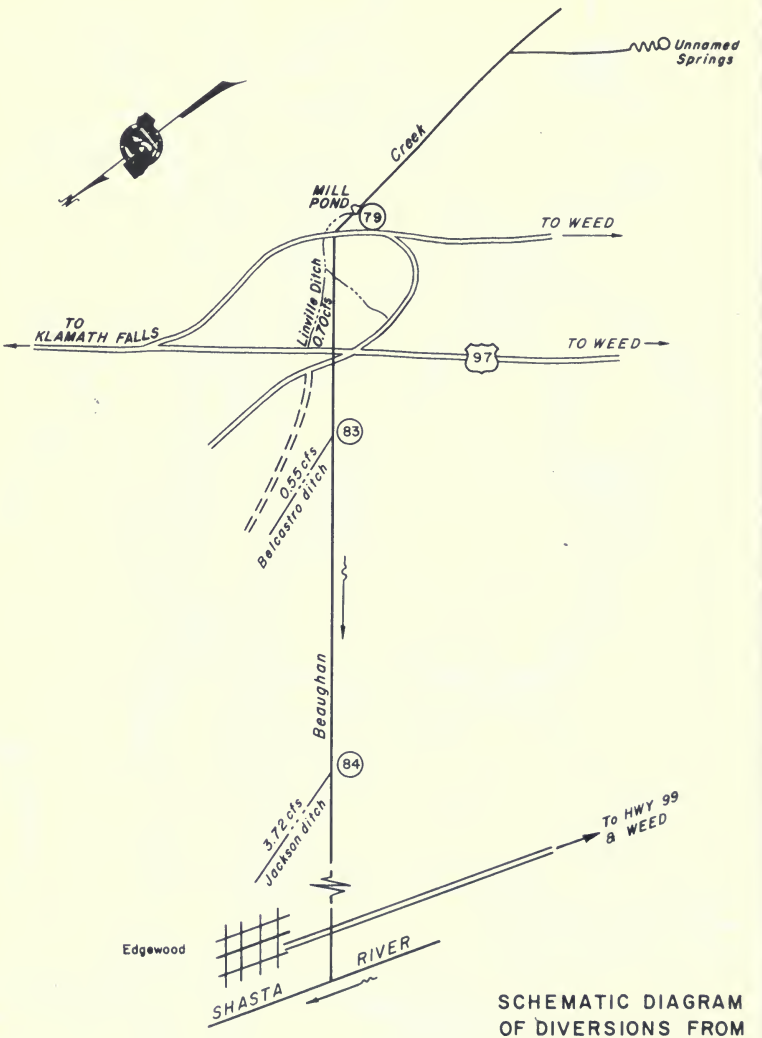
Day	March	April	May	June	July	August	September	Day
1	529	221	177	121	92	24	24	1
2	520	202	181	100	66	23	22	2
3	452	184	173	83	52	25	43	3
4	423	157	156	73	46	32	38	4
5	389	154	112	66	64	27	78	5
6	380	145	115	70	94	24	64	6
7	410	148	128	70	75	23	70	7
8	629	132	136	75	58	27	69	8
9	568	118	132	78	55	28	43	9
10	562	124	140	76	43	33	36	10
11	532	107	195	73	32	25	33	11
12	509	117	206	53	32	22	34	12
13	473	128	203	68	29	16	30	13
14	464	181	181	101	18	12	28	14
15	452	180	155	100	20	11	55	15
16	434	183	133	98	22	14	48	16
17	417	182	113	92	14	17	45	17
18	402	162	107	87	18	18	50	18
19	378	148	116	93	15	17	58	19
20	353	136	131	93	18	21	62	20
21	345	140	123	79	28	25	56	21
22	335	155	112	84	30	31	69	22
23	321	147	108	83	33	28	78	23
24	312	131	112	86	27	21	70	24
25	301	128	114	87	16	21	64	25
26	283	139	93	81	13	18	78	26
27	266	188	91	65	13	25	95	27
28	250	150	97	80	18	29	112	28
29	237	181	117	89	21	19	111	29
30	237	181	117	91	21	34	115	30
31	236		113		23	27		31
Mean	399	153	135	83.2	35.7	23.1	59.1	Mean
Runoff In Acre-Feet	24550	9090	8320	4950	2190	1420	3520	Runoff In Acre-Feet



SCHEMATIC DIAGRAM
OF SHASTA RIVER
WATERMASTER SERVICE AREA

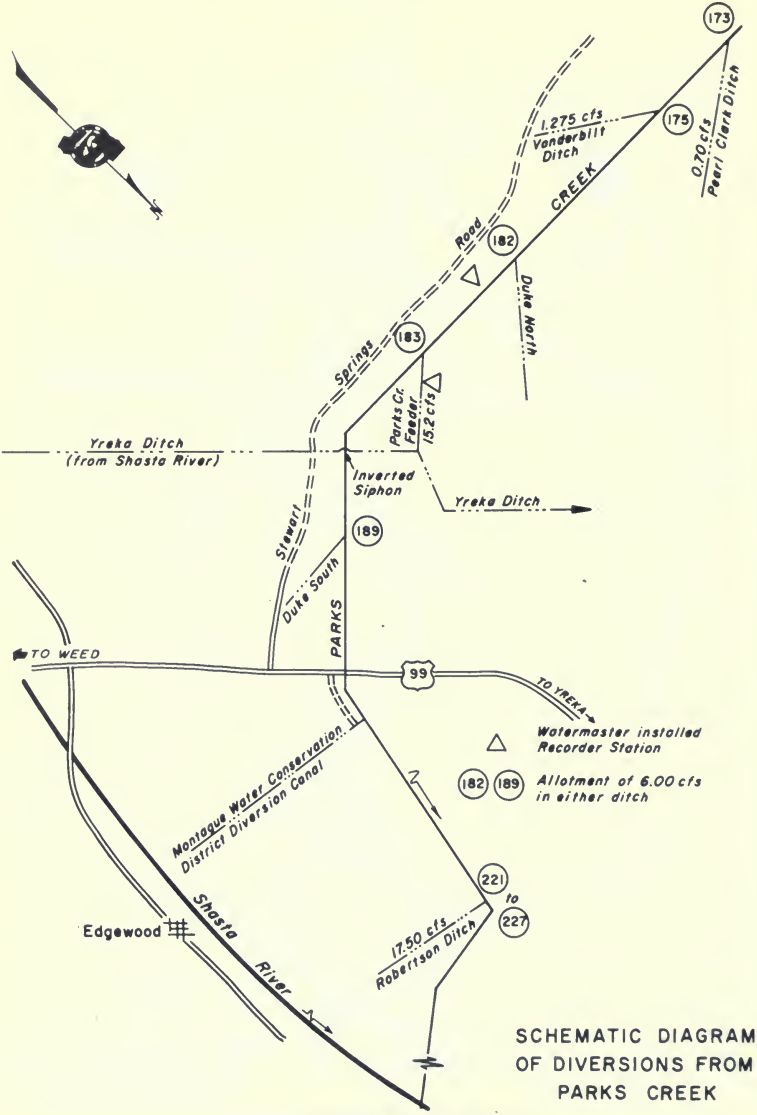

To MT. SHASTA
To WEED
SHASTA RIVER
Dale Creek
Eddy Creek
12
11
9.36 c.f.s.
Hammond-Scott
1.55 c.f.s.
Dow
15
0.60 c.f.s.
Dobkins
18
3000 c.f.s.
Yreka Ditch
Watermaster Installed Recorder Station
To WEED
SHASTA RIVER
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
UPPER SHASTA RIVER
99
To EDGEWOOD
to YREKA

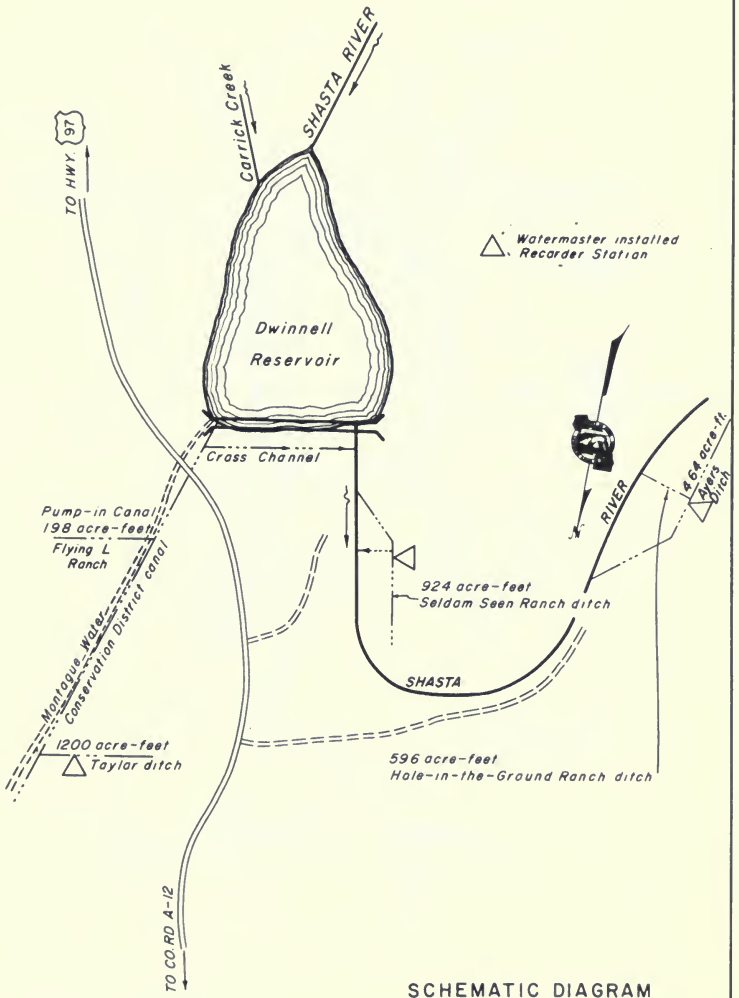

Permanent Recorder Station
55 Salanti ditch 1.175 cfs
60 Davidson ditch 0.70 cfs (not in use)
62 Belcastro ditch 0.10 cfs (not in use)
63 Upper Lemas ditch 2.60 cfs
64 Lower Lemas ditch 1.10 cfs
65 East Neal ditch 0.80 cfs
69 Alexander ditch 1.60 cfs
93 Spada ditch 1.05 cfs
99
45
47
1.05 cfs Thompson Ditch
0.30 cfs Sullivan ditch
Weed
55
60
Boles
62
97
TO KLAMATH FALLS
Carrick Creek See Figure 15d
Beaughan Creek See Figure 15c
63
64
Creek
RIVER
99
TO YREKA
65
27
1.00 cfs West Neal Ditch
Edgewood
Jackson
Cr.
69
93
DWR-Shasta River at Edgewood
Mills Ranch ditch 9.85 cfs
TO DWINNELL RES.
Mills Rch ditch
SCHEMATIC DIAGRAM OF DIVERSIONS FROM BOLES CREEK AND SHASTA RIVER ABOVE DWINNELL RESERVOIR



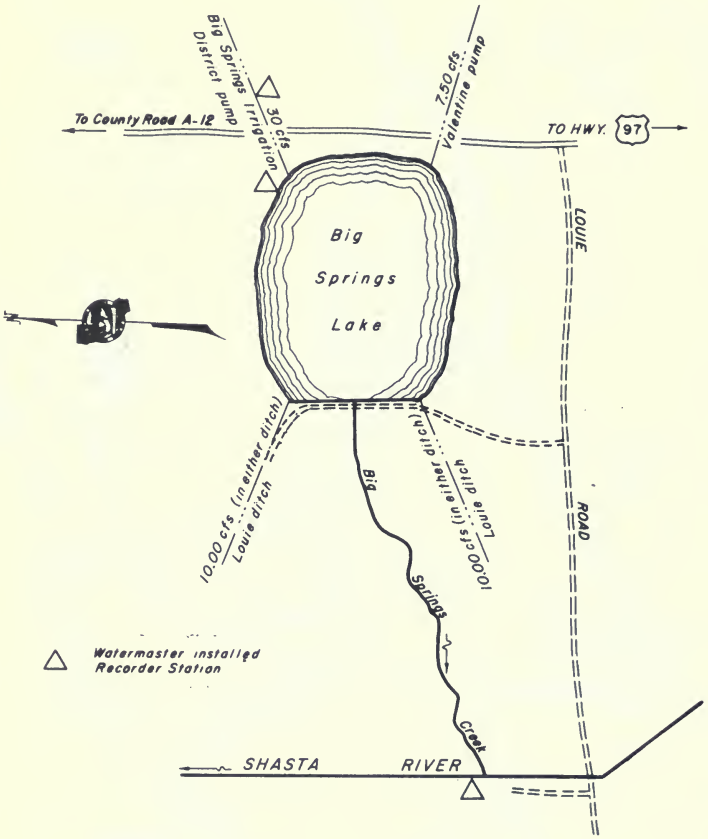
SCHEMATIC DIAGRAM OF DIVERSIONS FROM BEAUGHAN CREEK

SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
CARRICK CREEK

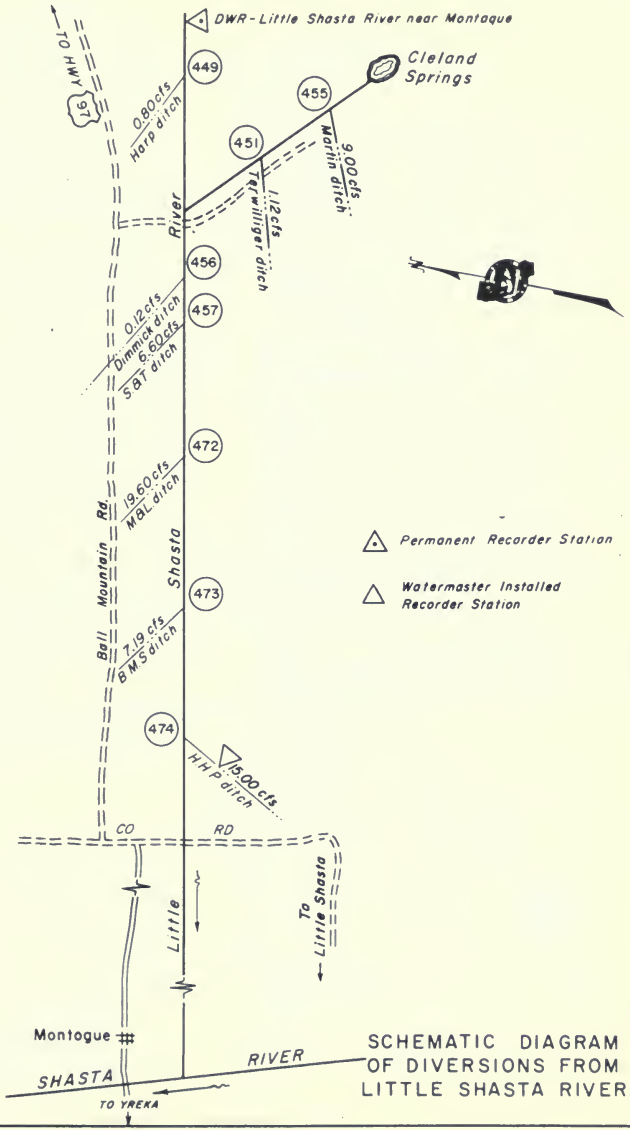

173
175
1.275 cfs
Vanderbilt
Ditch
0.70 cfs
Pearl Clark Ditch
CREEK
Road
182
Duke North
183
Springs
Parks Cr.
Feeder
15.2 cfs
Yreka Ditch
(from Shasta River)
Inverted
Siphon
Yreka Ditch
Stewart
189
Duke South
PARKS
TO WEED
99
TO YREKA
Watermaster installed
Recorder Station
182 189 Allotment of 6.00 cfs
in either ditch
Montague Water Conservation
District Diversion Canal
221
to
227
Edgewood
Shasta
River
17.50 cfs
Robertson Ditch
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
PARKS CREEK



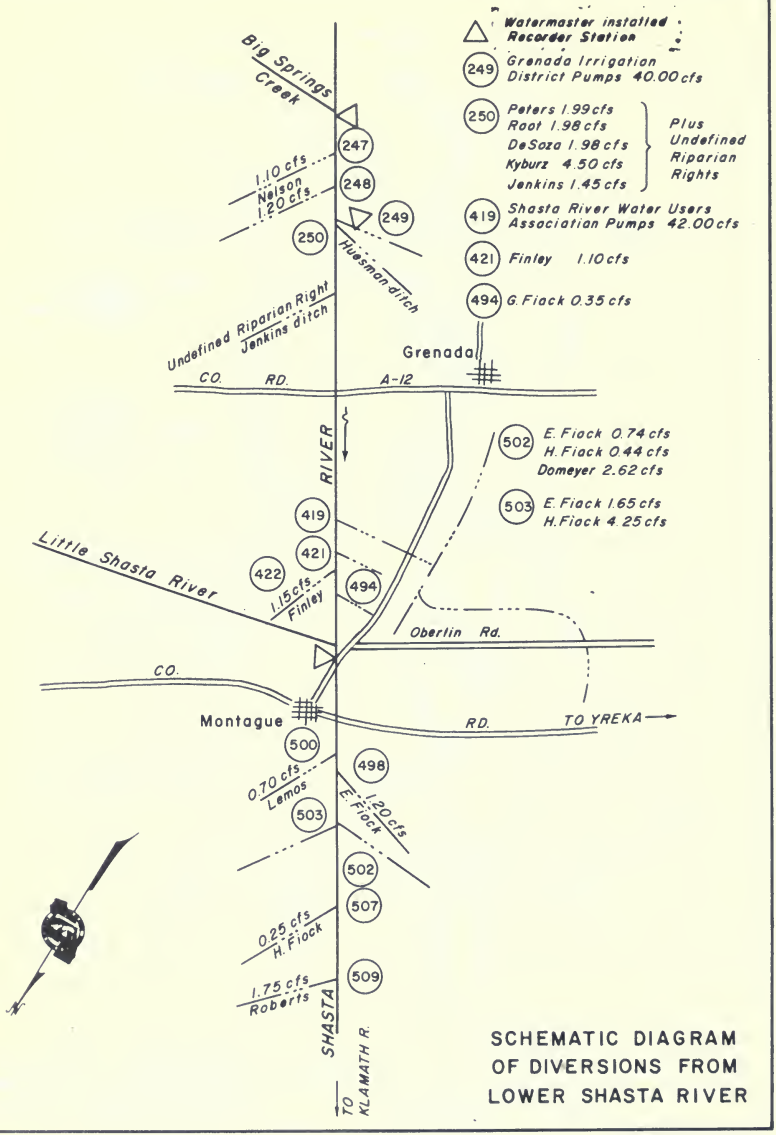
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
SHASTA RIVER PRIOR RIGHTS
BELOW DWINNELL RESERVOIR



SCHEMATIC DIAGRAM OF DIVERSIONS FROM BIG SPRINGS LAKE



SCHEMATIC DIAGRAM OF DIVERSIONS FROM LITTLE SHASTA RIVER



SCHEMATIC DIAGRAM OF DIVERSIONS FROM LOWER SHASTA RIVER

South Fork Pit River Watermaster Service Area

The South Fork Pit River service area is located primarily in Modoc County with a small portion extending into the northern part of Lassen County. There are 36 water right owners in the area with total allotments of 350.97 cubic feet per second.

Water supply for this service area is obtained from the South Fork Pit River and its tributaries which rise on the western slopes of the Warner Mountains. The river flows in a westerly direction, entering South Fork Valley near Likely. It then flows north through the valley to its confluence with the North Fork Pit River at Alturas. The South Fork Pit River is joined from the east by Fitzhugh Creek near the middle of the valley and by Pine Creek just south of Alturas.

The major area of water use is in South Fork Valley between Likely and Alturas. South Fork Valley is about 16 miles long and 3 miles wide with the valley floor lying at an elevation of about 4,500 feet. The valley is bounded on both sides by a rocky plateau that separates it from the surrounding mountains.

A schematic drawing of each major stream system within the South Fork Pit River service area is presented as Figures 16 through 16d, pages 113 through 117.

Water Supply

The water supply for Pine Creek is derived mostly from snowmelt runoff. Therefore, runoff is usually small in the early spring, increases to a peak in May as temperatures rise, and then gradually decreases throughout the remainder of the season. Water users supplement their irrigation supplies from other sources whenever possible.

The water supply for Fitzhugh Creek consists of snowmelt runoff early in the season and supplemental water diverted from Mill Creek above Jess Valley later in the season. Surplus water from Fitzhugh Creek is diverted into the Payne and French Reservoirs through Payne-French Ditch (Diversion 136) until about June, when the diversion is closed to supply downstream allotments. By July the creek has normally receded until only first priority allotments are available.

Payne Ditch (Diversion 1) is opened to import water from Mill Creek to Fitzhugh Creek when the snow has melted enough to allow access. This imported water is rediverted from North Fork Fitzhugh Creek through the Bowman Ditch to the Bowman Ranch. Return flow from Bowman Ranch to the creek is rediverted through Diversion 136 for stockwatering purposes in the Payne-French Ditch.

The water supply for the South Fork Pit River is derived primarily from snowmelt runoff, supplemented by water released from West Valley Reservoir. A number of streams, which rise at high elevations, collect at the mouth of Jess Valley to form the South Fork Pit River. West Valley Reservoir is located on West Valley Creek which enters the river below Jess Valley.

Most of the water users on the South Fork Pit River, except those in Jess Valley, are in the South Fork Irrigation District. The district stores water in West Valley Reservoir, which has a capacity of 22,240 acre-feet, and releases it to the South Fork Pit River as a supplemental supply when the natural flow becomes insufficient to meet demands. This usually occurs during the middle of June. Reservoir releases, together with the natural flow, are distributed by the watermaster in cooperation with the Board of Directors of the irrigation district. Except for extremely dry years, natural

flow, combined with stored water, is sufficient to supply all demands for water on the South Fork Pit River throughout the irrigation season.

Records of the daily mean discharge of the several stream gaging stations in the area are presented in Tables 38 through 41, pages 111 and 112.

Method of Distribution

Irrigation of the lands along tributary streams is accomplished by flooding through use of small lateral ditches. The water is distributed on a continuous-flow basis to each user through gravity-flow diversion systems. In some cases, rotation is practiced among several users.

Most irrigation in the South Fork Pit River area is by the check and border method. The lands receive water essentially on demand by supplementing natural flow with releases from West Valley Reservoir. However, irrigation between the various ranches must be coordinated to eliminate large peak demands from the reservoir and to use the return flow as much as possible. Actual distribution varies each year as there is no specific irrigation schedule in use.

The South Fork Pit River decree and the Pine Creek Agreement (see Table 1) establish a two-priority class system of distribution for the Fitzhugh Creek and Pine Creek stream systems. Distribution to the South Fork Pit River users (the decree provides for a two-priority class system) is carried out on an equal and correlative basis in accordance with the water requirements for each ranch. This method of operation was made possible by construction of West Valley Reservoir in 1937.

1970 Distribution

Watermaster service began April 8 in the South Fork Pit River service area and continued until September 30. Lynn W. Peterson, Water Resources Technician II, was watermaster during this period.

The water supply for the 1970 irrigation season was about average. Cold weather and a slightly below average snowpack delayed high runoff until late spring. However, the extremely hot and dry summer caused flows in the smaller tributaries to decrease rapidly. Consequently, only an average supply of water was available in these streams during late summer.

Pine Creek. Due to cold weather and the resulting low runoff, very close regulation was required during April and early May. Flow increased to over 100 percent of all allotments (two priorities) by late May and remained fairly steady throughout June. As the flow decreased in the latter part of the season, those water users with more than one ditch followed their usual practice of rotating their allotments in their various ditches. Flow had decreased to approximately 50 percent of first priority allotments by the end of the season.

Fitzhugh Creek. Regulation began in late June when the Yankee Jim and Bowman ditches became accessible. At that time surplus water was still available. The Payne Ditch from Mill Creek was opened July 2. This imported water was added to the Bowman Ditch allotment in accordance with the decree. At the end of the season the available water supply had decreased to about 50 percent of first priority allotments (two priorities).

South Fork Pit River. The natural flow of the South Fork Pit River was sufficient to meet all demands until July 14. Releases from West Valley Reservoir began at that time and continued throughout the season. The reservoir reached its capacity of 22,240 acre-feet around the last of March. At the end of September, 6,400 acre-feet remained in storage.

SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 38

SOUTH FORK PIT RIVER NEAR LIKELY

Day	March	April	May	June	July	August	September	Day
1	13	83	138	234	114	105	169	1
2	14	84	130	213	100	133	169	2
3	13	82	140	203	90	152	149	3
4	12	82	169	205	88	167	133	4
5	12	84	203	195	83	165	135	5
6	15	101	228	201	74	182	133	6
7	16	106	238	205	82	199	133	7
8	83	109	253	189	52	199	121	8
9	33	117	286	189	45	199	111	9
10	47	129	288	228	43	197	100	10
11	31	125	289	221	39	195	94	11
12	28	116	240	189	38	195	89	12
13	36	119	234	217	41	193	88	13
14	36	122	230	242	99	191	78	14
15	26	130	236	223	146	181	61	15
16	25	129	258	193	141	155	57	16
17	35	119	293	180	140	155	53	17
18	43	108	324	180	140	155	51	18
19	54	114	330	150	133	157	52	19
20	73	108	330	143	129	152	54	20
21	74	100	322	135	125	150	54	21
22	76	90	327	129	109	107	48	22
23	80	88	338	117	101	74	41	23
24	89	88	338	113	100	98	41	24
25	94	83	335	106	97	146	40	25
26	90	89	332	114	97	180	39	26
27	82	101	335	148	100	178	38	27
28	90	116	324	155	100	176	31	28
29	89	132	296	155	95	174	25	29
30	88	152	274	137	90	173	31	30
31	86		253		82	171		31
Mean	50.1	107	268	176	93.3	163	80.7	Mean
Runoff In Acre-Feet	3120	6360	16460	10490	5730	10020	4800	Runoff In Acre-Feet

TABLE 39

WEST VALLEY CREEK BELOW WEST VALLEY RESERVOIR

Day	March	April	May	June	July	August	September	Day
1			61	34	24	91	144	1
2			60	34	22	114	144	2
3			58	33	21	128	133	3
4			58	31	19	141	123	4
5			53	30	17	141	120	5
6			52	28	14	151	118	6
7			55	28	12	158	116	7
8			58	29	11	158	103	8
9			64	28	8.4	158	91	9
10			75	34	8.8	158	83	10
11			69	34	8.0	157	75	11
12			72	34	6.8	156	89	12
13			70	37	5.0	156	89	13
14			69	41	49 #	156	58	14
15			69	43	108	148	43	15
16			64	41	108	139	39	16
17			62	39	108	139	39	17
18			61	37	108	139	39	18
19			59	36	106	139	39	19
20			57	34	103	139	39	20
21			58	33	85	139	39	21
22		35*	55	31	75	99	34	22
23		35	54	28	89	64	29	23
24		34	53	26	89	88	29	24
25		34	50	26	89	126	29	25
26		35	47	26	89	148	29	26
27		39	45	26	89	148	29	27
28		53	43	28	89	148	29**	28
29		54	41	25	89	148		29
30		59	41	25	69	148		30
31			41		69	146		31
Mean		42.0	57.1	31.9	62.9	138	69.0	Mean
Runoff In Acre-Feet		750	3510	1900	3250	8480	3830	Runoff In Acre-Feet

* Beginning of Record
** End of Record
\# Beginning of Releases

SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 40

FITZHUGH CREEK BELOW DIVERSION NO. 137

Day	March	April	May	June	July	August	September	Day
1					7.1	2.9	1.3	1
2					7.1	2.9	1.0	2
3					7.1	2.9	1.5	3
4					7.1	3.3	1.5	4
5					7.1	2.9	2.3	5
6					7.1	3.1	2.1	6
7					6.2	2.7	1.9	7
8					5.0	2.7	1.3	8
9					4.0	2.9	0.8	9
10					3.6	2.9	1.0	10
11					3.6	2.3	0.8	11
12					3.6	2.1	1.0	12
13					3.8	1.9	1.5	13
14					2.9	1.7	1.7	14
15					2.9	1.5	1.0	15
16					2.7	1.3	1.5	16
17				9.3*	2.5	1.0	1.5	17
18				9.0	2.7	0.8	1.3	18
19				6.5	2.3	0.8	2.3	19
20				7.9	2.7	1.0	2.9	20
21				7.4	3.1	0.8	3.1	21
22				6.9	2.7	1.0	2.9**	22
23				6.7	2.7	1.3		23
24				6.5	2.9	1.3		24
25				6.7	2.9	1.3		25
26				6.9	3.1	1.7		26
27				7.4	2.9	1.7		27
28				7.6	2.9	1.5		28
29				7.6	3.6	1.5		29
30				7.4	3.1	1.5		30
31					3.3	1.3		31
Mean				7.6	4.0	1.9	1.6	Mean
Runoff In Acre-Feet				210	247	116	72	Runoff In Acre-Feet

* Beginning of Record
* End of Record

TABLE 41

PINE CREEK NEAR ALTURAS

Day	March	April	May	June	July	August	September	Day
1	13	15	28	75	41	14	12	1
2	13	15	23	70	39	14	12	2
3	13	15	24	69	37	14	12	3
4	13	15	27	69	35	14	12	4
5	14	15	30	70	34	14	12	5
6	15	16	30	71	32	14	12	6
7	16	16	29	71	30	14	12	7
8	17	16	32	70	29	14	11	8
9	18	16	32	66	28	13	11	9
10	19	17	33	71	27	13	11	10
11	21	17	34	61	26	13	11	11
12	19	16	31	56	25	12	11	12
13	20	17	33	56	24	12	11	13
14	19	17	32	54	23	13	11	14
15	16	17	34	50	22	13	11	15
16	17	17	38	47	22	12	11	16
17	17	17	45	45	21	12	11	17
18	16	17	46	44	20	12	11	18
19	15	17	47	42	20	12	11	19
20	16	16	51	42	19	12	11	20
21	15	16	59	42	19	12	11	21
22	15	16	68	44	18	12	11	22
23	15	16	74	45	17	12	11	23
24	16	16	80	46	17	12	10	24
25	16	16	89	47	17	12	10	25
26	18	17	97	48	16	12	10	26
27	16	15	99	49	15	12	10	27
28	18	17	100	49	15	12	10	28
29	15	21	99	45	15	12	10	29
30	15	39	89	43	15	12	10	30
31	15		80		15	12		31
Mean	16.1	17.1	52.0	55.4	23.6	12.7	11.0	Mean
Runoff In Acre-Feet	990	1020	3200	3300	1450	780	655	Runoff In Acre-Feet

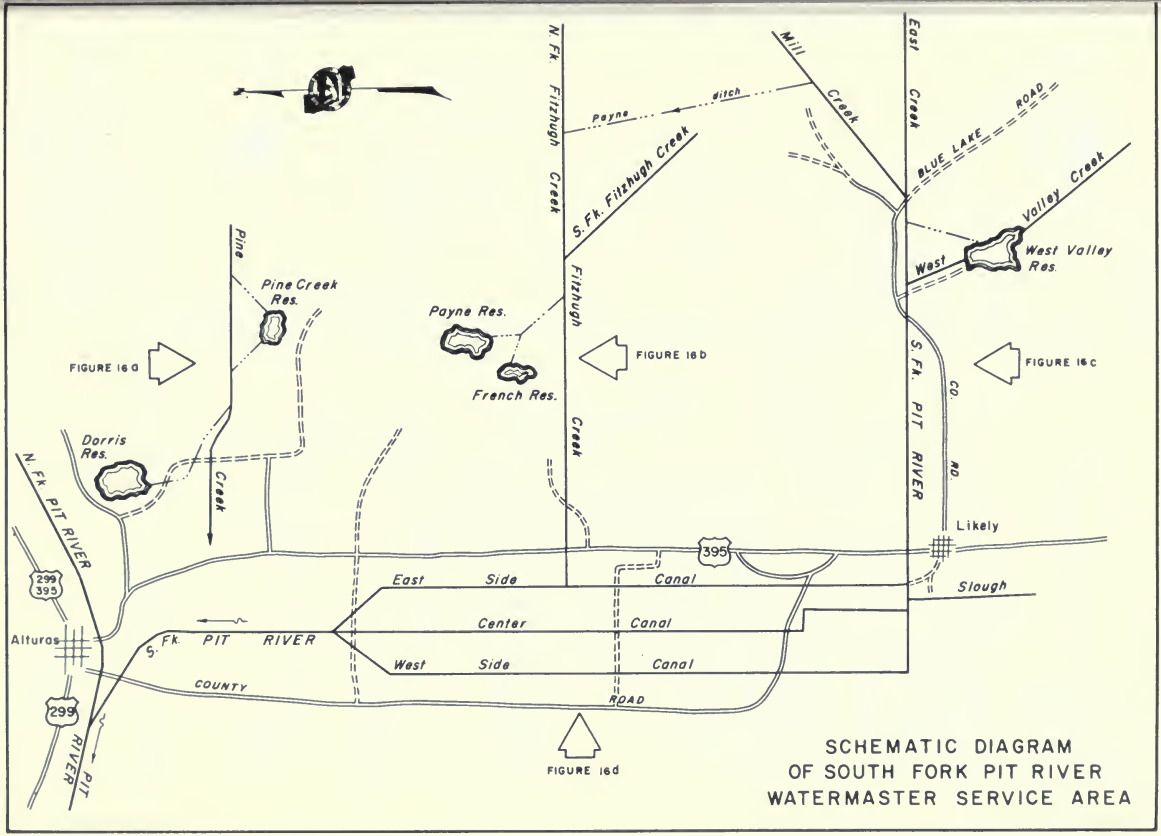
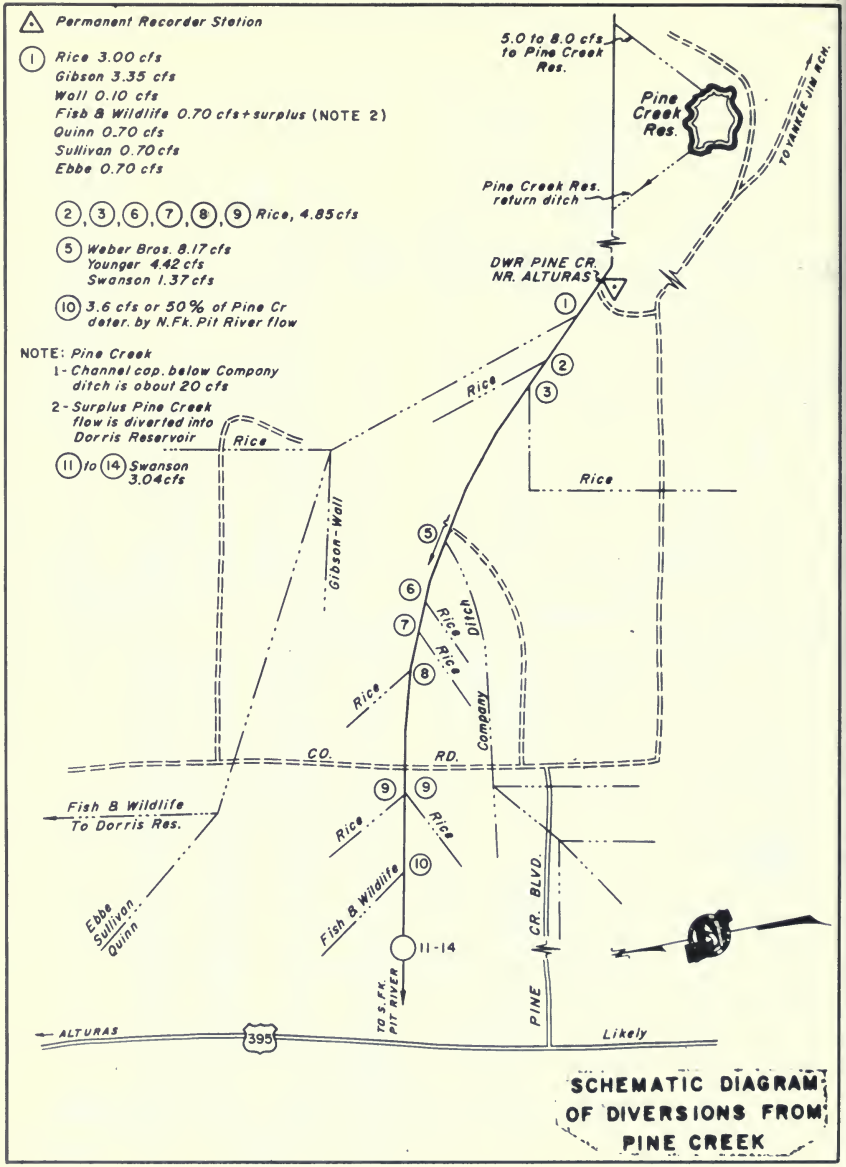
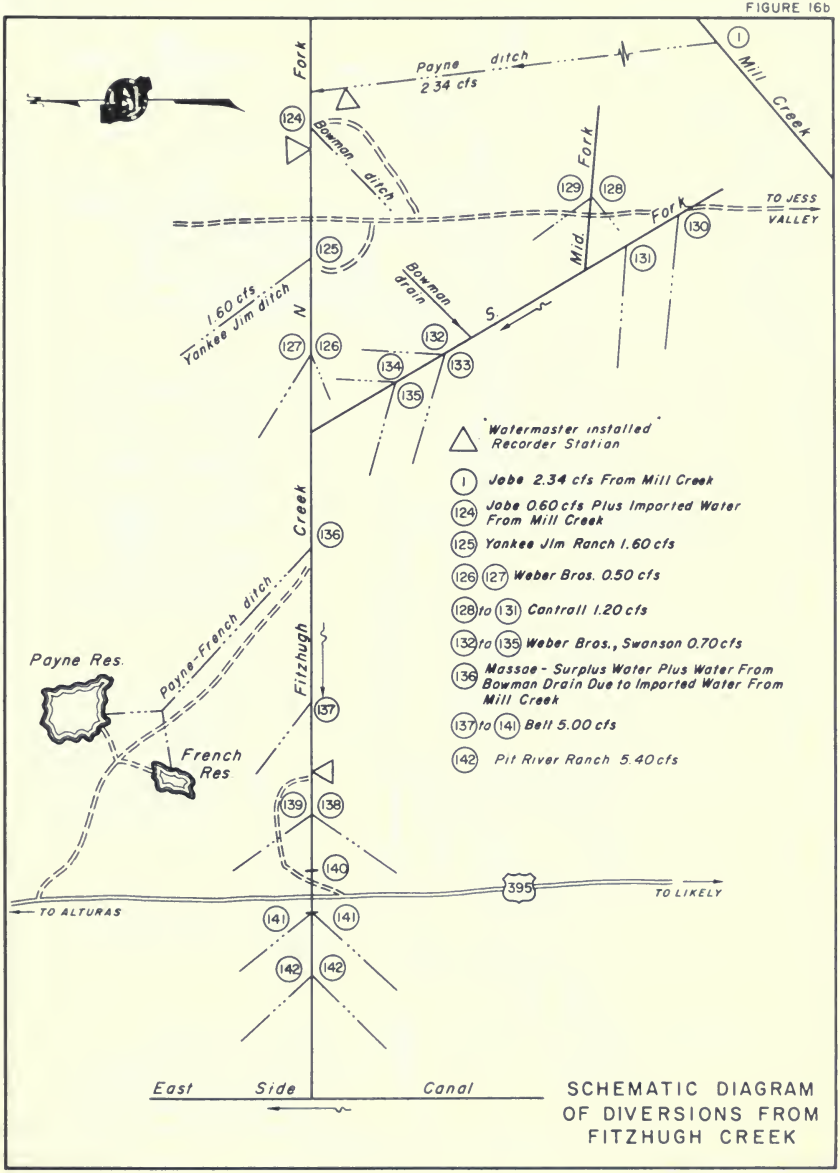

N. Fk. Fitzhugh Creek
Payne ditch
Mill Creek
East Creek
BLUE LAKE ROAD
S. Fk. Fitzhugh Creek
Valley Creek
West Valley Res.
West
Pine
Pine Creek Res.
Payne Res.
French Res.
Fitzhugh Creek
S. Fk. PIT RIVER
CO. RD.
FIGURE 16 a
FIGURE 16 b
FIGURE 16 c
Dorris Res.
N. Fk. PIT RIVER
Creek
Likely
395
East Side Canal
Slough
Center Canal
299
395
Alturas
S. Fk. PIT RIVER
West Side Canal
COUNTY ROAD
299
PIT RIVER
FIGURE 16d
SCHEMATIC DIAGRAM
OF SOUTH FORK PIT RIVER
WATERMASTER SERVICE AREA

FIGURE 16

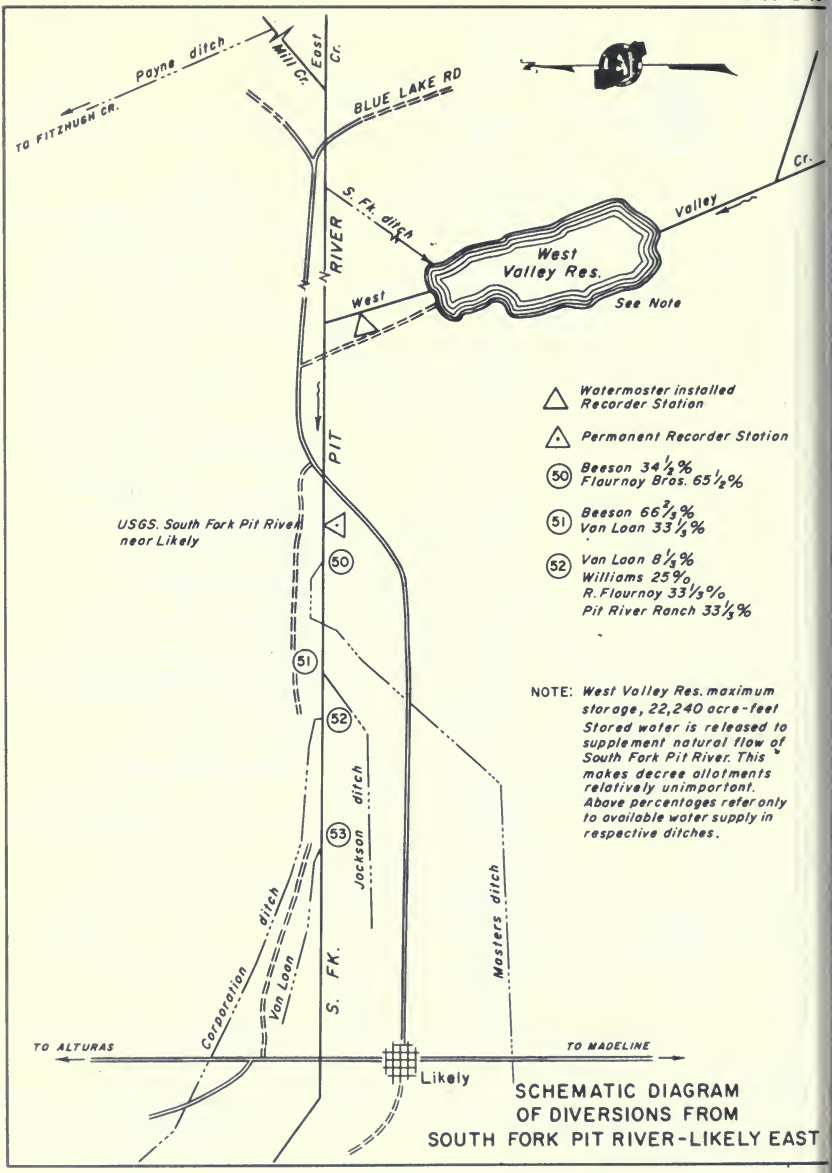


SCHEMATIC DIAGRAM OF DIVERSIONS FROM PINE CREEK

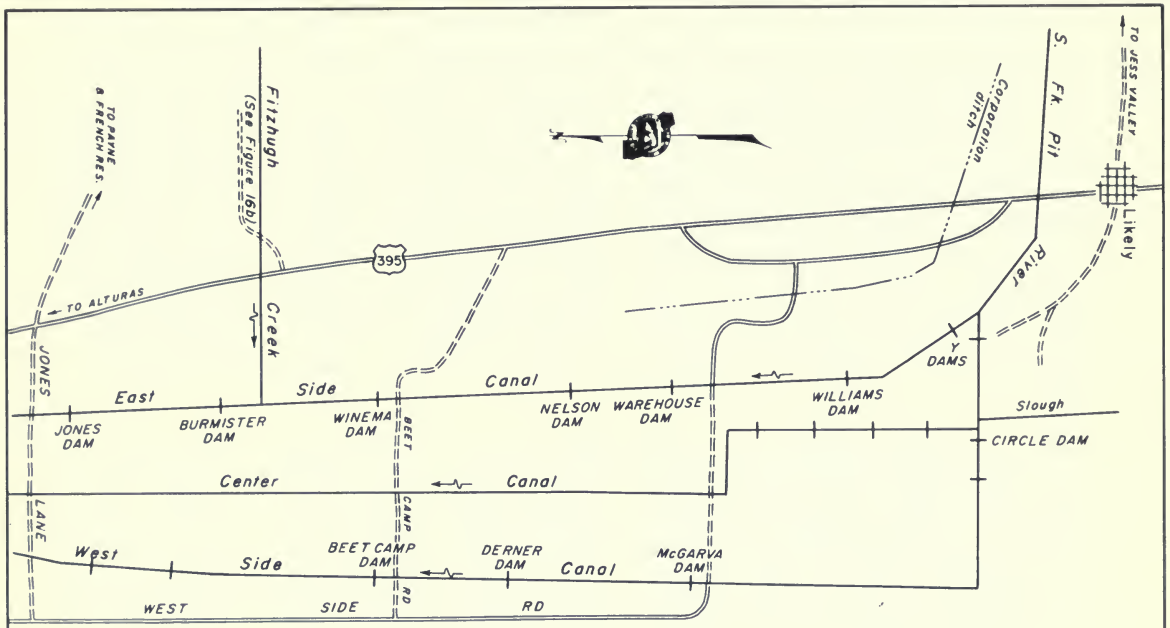
FIGURE 16b



SCHEMATIC DIAGRAM OF DIVERSIONS FROM FITZHUGH CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM SOUTH FORK PIT RIVER-LIKELY EAST



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
SOUTH FORK PIT RIVER-LIKELY NORTH

FIGURE 16d

Surprise Valley Watermaster Service Area

The Surprise Valley service area is located in the extreme eastern part of Modoc County. There are 172 water right owners in the service area with total allotments of 313.75 cubic feet per second. The source of water supply is comprised of 10 individual stream systems rising on the eastern slope of the Warner Mountains. These streams are fed by snowmelt runoff and traverse a fast, precipitous course down the eastern slope of the Warner Mountains to the valley floor where numerous, scattered diversion ditches convey water to the irrigated lands. The place of use is situated in a long, narrow area extending in a north-south direction between the foot of the Warner Mountains and the Alkali Lakes which lie in the center of Surprise Valley.

Surprise Valley extends from nearly the Oregon border on the north to Lassen County on the south, a distance of approximately 50 miles. The valley varies in width from about 8 to 10 miles. It is bordered on the north, south, and west by the rugged Warner Range and on the east by the typical mountainous desert terrain of Nevada. The valley floor is at an elevation of approximately 4,700 feet.

A schematic drawing of each major stream system with the Surprise Valley service area is presented as Figures 17 through 17j, pages 129 through 140.

Water Supply

The water supply is derived almost entirely from snowmelt runoff, with only minor spring-fed flows occurring in the latter part of the season. There are no known economically justified storage sites on the service area creeks. Because of the lack of regulatory storage, the available water supply at any specific diversion point may vary considerably within a few hours. An extreme differential in day and night temperatures causes extensive variation in snowmelt runoff quantities. This problem is further aggravated by the relatively short and steep drainage area. In addition, occasional summer thundershowers may cause a creek to discharge a flow of mammoth portions for several hours. These flashes are apt to cause considerable damage in washouts and debris deposition and are of such short duration that no beneficial use can be made of the water.

Records of the daily mean discharge at several stream gaging stations within the service area are presented in Tables 42 through 52, pages 122 through 127.

Method of Distribution

The continuous flow method of distribution is employed on most creeks; however, in a few instances the available water supply is rotated among the users in accordance with either decree schedules or by mutual agreements.

Alfalfa and meadow hay, the major crops grown in the valley, are irrigated in most instances by wild flooding, although some lands are dependent upon subsurface irrigation. Also, recent development of deep wells has placed many acres under sprinkler irrigation. Only surface water supplies are under state watermaster service.

To facilitate distribution of irrigation waters, construction of permanent diversion dams, headgates, and measuring devices has been stressed during recent years. Although these structures do not solve the problems of discharge variation and debris deposition, they do provide significant assistance in solving water measurement and distribution problems.

The several decrees (see Table 1) which apply to the Surprise Valley service area establish the following number of priority classes for the various stream systems: Bidwell Creek - four until July 10, five thereafter; Mill Creek - four; Soldier Creek - rotation March 19 to June 19 (upper users eight, lower users seven), twelve priorities in effect during the remainder of the year; Pine Creek - a rotation schedule based on accumulative flow in acre-feet; Cedar Creek - four; Deep Creek - five; Owl Creek - twenty-one; Rader Creek - six; Eagle Creek - four; and Emerson Creek - four.

1970 Distribution

Watermaster service began in the Surprise Valley service area on March 19 and continued until September 30. Jerry T. Erb, Water Resources Technician II, was watermaster during this period.

The 1970 irrigation season was very successful due to late snowstorms and a long, cool spring. This allowed more efficient use of the water as the snowpack melted at a slow, steady rate. Streams in the northern half of the area had approximately normal runoff while streams in the southern half received above normal runoff.

Greater than average crop yields were experienced throughout the valley, especially by ranchers who supplemented their irrigation by ground water pumping. Again in 1970, as in previous years, additional deep wells were drilled. Several new diversion structures and measuring devices were also built this season.

Bidwell Creek. Total stream runoff available to Bidwell Creek users during the period April 1 through September 30 was 11,240 acre-feet or approximately 97 percent of normal. Enough runoff was available to supply all allotments until mid-June (four priorities until July 10, five priorities thereafter). The creek then receded steadily, reaching a low of 4 cubic feet per second in late September. From July 10 through the first week in August full first and partial second priorities were satisfied. During the remainder of the irrigation season only first priority allotments received water.

Mill Creek. Total stream runoff available to Mill Creek users during the period April 1 through September 30 was 5,110 acre-feet or approximately 99 percent of normal. During the month of April, sufficient water was available to supply partial third priority allotments (four priorities). Between the first week in May and the second week of June, enough water was available to satisfy all priorities. From mid-June until late August the streamflow decreased steadily until only partial first priorities were satisfied. September brought cooler weather and a slight rise in the streamflow with enough water to satisfy full first priority allotments.

Soldier Creek. A near normal runoff was available to Soldier Creek users. During the first two rotation cycles, the lower users received partial third priority allotments. As the snowpack began melting in May, the streamflow increased until the runoff was sufficient to satisfy all priorities by May 5 and continued until June 1. Second and third priorities were available in decreasing amounts between the first week in June and the end of July, after which only first priorities were satisfied.

Pine Creek. Total stream runoff available to Pine Creek users during the period March 20 through September 30 was 855 acre-feet or approximately 65 percent of normal. The stream system was operated according to the rotation schedule (on an accumulated flow basis) as set forth in the court decree. On May 25 the flow dropped below 4 cubic feet per second, thereby ending the rotation schedule. From this date through May 29 the entire flow was diverted into the North Channel. On May 30 the creek receded to 1.6 cubic

feet per second, and, in accordance with the decree, the entire amount was diverted to the Bordwell Ranch via the Cressler ditch. This diversion continued for about 3 weeks until the water would no longer reach the place of use. From June 20 throughout the remainder of the season, Pine Creek was dry.

Cedar Creek. Total stream runoff available to Cedar Creek users from April 1 through September 30 was 2,190 acre-feet, or approximately 83 percent of normal. The supply was sufficient to satisfy first and partial second priority allotments (four priorities) until the third week in June. The stream decreased steadily until by June 19 only the first priority allotment was being satisfied. The creek continued to recede at a steady rate until the low of 0.2 cubic feet per second was reached at the end of September.

Deep Creek. The stream runoff available to Deep Creek users from April 1 through September 30 was near normal. Since there is only one priority on North Deep Creek, the entire flow was diverted into the Company ditch throughout the entire season. The flow in South Deep Creek increased steadily during the beginning of the irrigation season so that by mid-May there was enough water to supply all five priorities through the end of May. Thereafter, the flows declined steadily until only first priority allotments were available by mid-June. The creek continued to recede throughout the remainder of the irrigation season, with only first priority water available in decreasing amounts.

Owl Creek. Total stream runoff available to Owl Creek users from April 1 through September 30 was 7,930 acre-feet, or approximately 129 percent of normal. Snowmelt, beginning in early April caused steadily increasing flows. By mid-May, a sufficient supply existed to fill all 21 priorities. The high flows continued, reaching a maximum of 81 cubic feet per second on June 6. Thereafter the creek receded rapidly, and throughout the remainder of June it fluctuated between 28 and 48 cubic feet per second. From the end of June the flow decreased steadily until mid-September when the low of 2.4 cubic feet per second was reached. Sufficient water was available in July and August to supply the first two and most of the third "special" eighth priority allotments.

Rader Creek. The Rader Creek users experienced an above normal irrigation season. By mid-May melting snows had increased the flow in Rader Creek enough to satisfy all six priority allotments. By the middle of June the creek had receded to 15 cubic feet per second which satisfied third priority allotments. During the month of September only partial first priority water was available.

Eagle Creek. Total stream runoff available to Eagle Creek users from April 1 through September 30 was 6,030 acre-feet, or approximately 117 percent of normal. By the fourth week in May, Eagle Creek contained enough water to satisfy all four priorities. This continued until the first of July when the creek began to recede. The flows continued to decline steadily throughout the remainder of the season, until by mid-August only first priority water was available.

Emerson Creek. An above normal runoff season was experienced by Emerson Creek users. By the middle of May the melting snow had increased the flow in Emerson Creek to fully satisfy all four priorities. The flow began to recede by mid-June and continued to do so gradually until the season low was reached at the end of August. Sufficient water remained in the creek throughout the remainder of the season to satisfy first and partial second priority allotments.

SURPRISE VALLEY WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 42

BIOWELL CREEK NEAR FORT BIOWELL

Day	March	April	May	June	July	August	September	Day
1	17	23	16	83	18	7.8	4.6	1
2	16	23	21	88	17	7.5	4.5	2
3	16	24	32	96	16	7.3	4.4	3
4	15	24	47	103	15	7.2	5.0	4
5	15	28	64	100	15	7.0	5.1	5
6	15	36	88	103	15	6.9	4.8	6
7	18	39	81	95	14	6.8	4.7	7
8	20	36	74	85	14	6.8	4.5	8
9	19	37	87	77	13	6.7	4.4	9
10	19	42	78	76	13	6.4	4.5	10
11	19	40	65	89	13	6.2	4.8	11
12	18	36	55	81	12	5.8	4.6	12
13	21	32	47	56	12	6.0	4.8	13
14	27	29	42	50	12	5.9	4.9	14
15	28	26	46	45	11	5.7	4.9	15
16	28	22	63	43	11	5.6	4.7	16
17	27	21	96	41	11	5.5	4.7	17
18	25	21	124	38	10	5.5	4.6	18
19	24	21	135	36	10	5.4	4.7	18
20	23	19	138	36	10	5.2	4.7	20
21	23	18	122	33	9.9	5.0	4.8	21
22	24	16	117	31	9.7	5.1	4.5	22
23	27	16	112	28	9.4	5.1	4.1	23
24	31	16	106	25	9.2	5.0	4.1	24
25	36	15	105	24	8.9	4.9	4.1	25
26	36	15	127	23	8.8	4.9	4.0	26
27	33	15	142	26	8.6	4.8	3.8	27
28	31	14	127	33	8.5	4.7	3.8	28
29	30	14	109	24	8.4	4.5	3.7	29
30	28	15	98	21	8.3	4.6	3.5	30
31	25		90		8.1	4.5		31
Mean	23.7	24.4	84.3	55.0	11.6	5.8	4.5	Mean
Runoff In Acre-Feet	1460	1450	5180	3270	714	358	268	Runoff In Acre-Feet

TABLE 43

MILL CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1		13*	12	36	10	3.4	1.6	1
2		13	15	34	9.7	3.4	1.8	2
3		13	17	33	9.4	3.4	1.9	3
4		12	24	31	9.1	3.4	2.8	4
5		13	30	29	9.1	3.1	2.8	5
6		15	33	28	8.8	3.1	2.5	6
7		15	32	27	8.5	3.1	2.2	7
8		15	34	26	8.2	3.1	2.2	8
9		15	52	25	7.9	3.1	2.2	9
10		17	53	24	7.6	2.8	1.9	10
11		16	43	24	7.3	2.5	1.9	11
12		15	37	23	7.0	2.5	1.9	12
13		15	35	22	6.7	2.5	2.2	13
14		14	33	20	6.4	2.5	2.5	14
15		13	33	19	6.1	2.2	2.5	15
16		12	35	18	5.8	1.9	2.5	16
17		12	43	18	5.5	1.9	2.2	17
18		12	51	17	5.2	1.8	2.5	18
19		14	51	17	4.9	1.9	3.1	19
20		12	48	16	4.8	1.9	3.1	20
21		11	47	16	4.8	1.9	2.5	21
22		10	48	15	4.6	1.9	2.5	22
23		10	47	15	4.3	1.8	2.5	23
24		10	48	14	4.0	1.9	2.2	24
25		10	47	13	4.0	1.6	2.2	25
26		14	50	14	4.0	1.6	2.2	26
27		16	51	15	3.7	1.6	2.2	27
28		14	47	20	3.7	1.6	2.2	28
29		11	44	15	3.7	1.6	2.2	29
30		11	42	11	3.4	1.6	2.2	30
31			38		3.4	1.6		31
Mean		13	39	21	6.2	2.3	2.3	Mean
Runoff In Acre-Feet		778	2410	1260	379	144	137	Runoff In Acre-Feet

* Beginning of Record

SURPRISE VALLEY WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 44

SOLDIER CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1								1
2								2
3								3
4								4
5								5
6								6
7								7
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15	NO RECORD AVAILABLE FOR 1970 SEASON							15
16								16
17								17
18								18
19								19
20								20
21								21
22								22
23								23
24								24
25								25
26								26
27								27
28								28
29								29
30								30
31								31
Mean								Mean
Runoff In Acre-Feet								Runoff In Acre-Feet

TABLE 45

PINE CREEK AT DIVISION OF NORTH AND SOUTH CHANNELS

Day	March	April	May	June	July	August	September	Day
1		4.1	6.6	1.5				1
2		3.8	6.8	1.4				2
3		3.5	7.2	1.4				3
4		4.2	7.9	1.3				4
5		5.7	10	1.3				5
6		6.6	8.5	1.2				6
7		5.4	7.5	1.2				7
8		4.2	9.1	1.1				8
9		5.4	10	1.1				9
10		6.2	11	1.0				10
11		4.1	11	1.0				11
12		3.1	11	1.0				12
13		2.4	12	0.8				13
14		2.4	11	0.6				14
15		2.2	10	0.4				15
16		2.3	11	0.2				16
17		2.4	11	0.0**				17
18		2.4	11					18
19		2.4	11					19
20	4.7*	2.2	10					20
21	5.0	2.2	9.0					21
22	5.5	2.0	8.0					22
23	6.0	2.4	7.0					23
24	7.5	2.4	6.0					24
25	7.2	2.3	6.0					25
26	5.9	2.4	5.0					26
27	5.0	3.3	4.0					27
28	4.7	3.8	3.0					28
29	4.5	3.9	2.0					29
30	4.4	4.2	1.8					30
31	4.2		1.5					31
Mean	5.4	3.5	6.0	1.0				Mean
Runoff In Acre-Feet	128	208	489	33				Runoff In Acre-Feet

* Beginning of Record
** End of Flow

SURPRISE VALLEY WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 46

CEDAR CREEK NEAR CEDARVILLE

Day	March	April	May	June	July	August	September	Day
1	6.1	8.2	13	13	3.3	0.5	0.3	1
2	5.9	8.2	13	13	3.2	0.5	0.3	2
3	5.6	8.4	14	12	3.0	0.5	0.3	3
4	5.5	8.6	14	11	2.8	0.5	0.3	4
5	5.1	8.4	14	11	2.6	0.5	0.3	5
6	5.1	6.6	14	10	2.4	0.4	0.3	6
7	5.4	9.1	15	9.5	2.2	0.4	0.3	7
8	5.9	9.3	15	9.1	2.1	0.4	0.3	8
9	6.1	9.5	16	8.8	1.9	0.4	0.3	9
10	6.1	9.6	16	8.6	1.8	0.4	0.3	10
11	6.1	10	17	8.5	1.7	0.4	0.3	11
12	6.2	10	17	8.0	1.5	0.4	0.3	12
13	6.4	10	17	7.6	1.4	0.3	0.3	13
14	7.0	11	18	7.1	1.3	0.3	0.3	14
15	7.3	11	18	6.6	1.3	0.3	0.3	15
16	7.4	11	19	6.0	1.2	0.3	0.3	16
17	7.5	11	19	5.6	1.2	0.3	0.3	17
18	7.6	11	19	5.3	1.1	0.3	0.3	18
19	7.6	11	18	4.9	1.0	0.3	0.3	19
20	7.8	12	19	4.5	1.0	0.3	0.3	20
21	7.8	12	18	4.1	0.9	0.3	0.3	21
22	7.8	12	18	4.0	0.8	0.3	0.3	22
23	8.0	12	18	3.6	0.8	0.3	0.3	23
24	8.1	12	18	3.4	0.6	0.3	0.3	24
25	8.2	12	18	3.2	0.7	0.3	0.3	25
26	8.2	13	18	3.2	0.7	0.3	0.3	26
27	8.2	13	17	3.2	0.7	0.3	0.3	27
28	8.2	12	17	3.3	0.6	0.3	0.3	28
29	8.2	13	17	3.3	0.6	0.3	0.2	28
30	8.3	13	16	3.3	0.6	0.3	0.2	30
31	8.3		15		0.6	0.3		31
Mean	7.0	10.7	16.6	6.8	1.5	0.4	0.3	Mean
Runoff In Acre-Feet	431	635	1020	408	91	22	17	Runoff In Acre-Feet

TABLE 47

NORTH DEEP CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1								1
2								2
3								3
4								4
5								5
6								6
7								7
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15	NO RECORD AVAILABLE FOR 1970 SEASON							15
16								16
17								17
18								18
19								19
20								20
21								21
22								22
23								23
24								24
25								25
26								26
27								27
28								28
29								29
30								30
31								31
Mean								Mean
Runoff In Acre-Feet								Runoff In Acre-Feet

SURPRISE VALLEY WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 48

SOUTH DEEP CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1								1
2								2
3								3
4								4
5								5
6								6
7								7
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15			NO RECORD AVAILABLE FOR 1970 SEASON					15
16								16
17								17
18								18
19								19
20								20
21								21
22								22
23								23
24								24
25								25
26								26
27								27
28								28
29								29
30								30
31								31
Mean								Mean
Runoff In Acre-Feet								Runoff In Acre-Feet

TABLE 49

OWL CREEK BELOW ALLEN-ARRECHE DITCH

Day	March	April	May	June	July	August	September	Day
1		22*	27	52	26	4.8	2.7	1
2		22	31	59	25	4.8	2.7	2
3		21	37	67	24	4.5	2.7	3
4		21	37	69	24	4.3	2.7	4
5		22	34	73	23	4.1	2.7	5
6		26	32	81	22	4.0	2.6	6
7		26	30	80	20	3.8	2.6	7
8		25	31	72	19	3.7	2.6	8
9		25	30	67	17	3.7	2.6	9
10		27	28	48	16	3.5	2.5	10
11		26	23	35	15	3.4	2.4	11
12		25	21	33	13	3.3	2.4	12
13		25	20	32	13	3.1	2.4	13
14		25	18	30	12	3.0	2.4	14
15		25	21	28	11	3.0	2.4	15
16		25	30	29	10	3.0	2.4	16
17		25	44	30	10	2.9	2.4	17
18		26	50	33	8.0	2.8	2.4	18
19		28	49	36	10	2.8	2.4	19
20		26	43	42	11	2.8	2.4	20
21		26	44	45	10	2.8	2.4	21
22		26	48	47	7.4	2.7	2.4	22
23		26	51	46	7.0	2.7	2.4	23
24		26	47	46	6.7	2.7	2.4	24
25		26	54	47	6.3	2.7	2.4	25
26		26	57	47	6.2	2.7	2.4	26
27		26	68	48	5.9	2.7	2.4	27
28		26	88	46	5.6	2.7	2.4	28
29		27	63	38	5.4	2.7	2.4	29
30		27	57	30	5.3	2.7	2.4	30
31			51		5.1	2.7		31
Mean		25.1	40.1	47.6	12.9	3.3	2.5	Mean
Runoff In Acre-Feet		1490	2460	2840	793	201	148	Runoff In Acre-Feet

* Beginning of Record

SURPRISE VALLEY WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 50

RADER CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1								1
2								2
3								3
4								4
5								5
6								6
7								7
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15	NO RECORD AVAILABLE FOR 1970 SEASON							15
16								16
17								17
18								18
19								19
20								20
21								21
22								22
23								23
24								24
25								25
26								26
27								27
28								28
29								29
30								30
31								31
Mean								Mean
Runoff In Acre-Feet								Runoff In Acre-Feet

TABLE 51

EAGLE CREEK AT EAGLEVILLE

Day	March	April	May	June	July	August	September	Day
1	4.0	6.7	6.0	44	33	7.9	2.6	1
2	4.6	6.3	7.6	49	33	7.5	2.6	2
3	6.6	6.3	12	61	33	7.0	2.6	3
4	3.5	6.5	17	66	33	6.3	3.2	4
5	4.1	8.1	18	82	34	5.8	3.1	5
6	3.6	6.8	15	100	28	5.6	2.6	6
7	4.2	9.3	13	74	23	5.5	2.6	7
8	4.4	8.8	14	58	21	4.9	2.5	8
9	4.5	9.1	13	52	18	4.3	2.5	9
10	5.6	8.9	12	41	17	3.9	2.3	10
11	4.3	9.4	10	33	14	3.1	2.3	11
12	4.5	8.5	10	29	10	2.6	2.4	12
13	4.6	8.3	10	25	9.3	2.6	2.4	13
14	5.2	8.2	10	24	9.1	2.5	2.4	14
15	4.7	7.7	12	25	8.5	2.7	2.4	15
16	4.7	7.3	17	25	8.1	2.6	2.4	16
17	4.7	7.4	24	26	7.9	2.7	2.3	17
18	5.5	7.4	27	32	7.9	3.0	2.3	18
19	5.7	6.8	25	43	8.4	2.9	2.4	19
20	5.2	7.3	24	48	7.8	2.8	2.4	20
21	5.1	6.5	24	51	7.2	2.8	2.3	21
22	5.4	6.3	25	58	7.1	3.0	2.3	22
23	5.9	6.2	26	64	6.7	3.0	2.3	23
24	7.0	6.1	27	60	6.4	3.0	2.3	24
25	7.8	6.0	28	52	6.2	2.9	2.3	25
26	7.4	6.0	38	58	5.9	2.8	2.1	26
27	6.7	5.7	48	65	8.0	2.8	2.1	27
28	6.9	5.8	47	60	15	2.8	2.1	28
29	7.3	5.0	45	50	12	2.5	2.1	29
30	7.1	5.4	42	40	10	2.5	2.1	30
31	6.6		41		8.9	2.6		31
Mean	5.4	7.2	22.2	49.6	14.6	3.6	2.4	Mean
Runoff In Acre-Feet	333	430	1360	2960	907	231	143	Runoff In Acre-Feet

SURPRISE VALLEY WATERMASTER SERVICE AREA

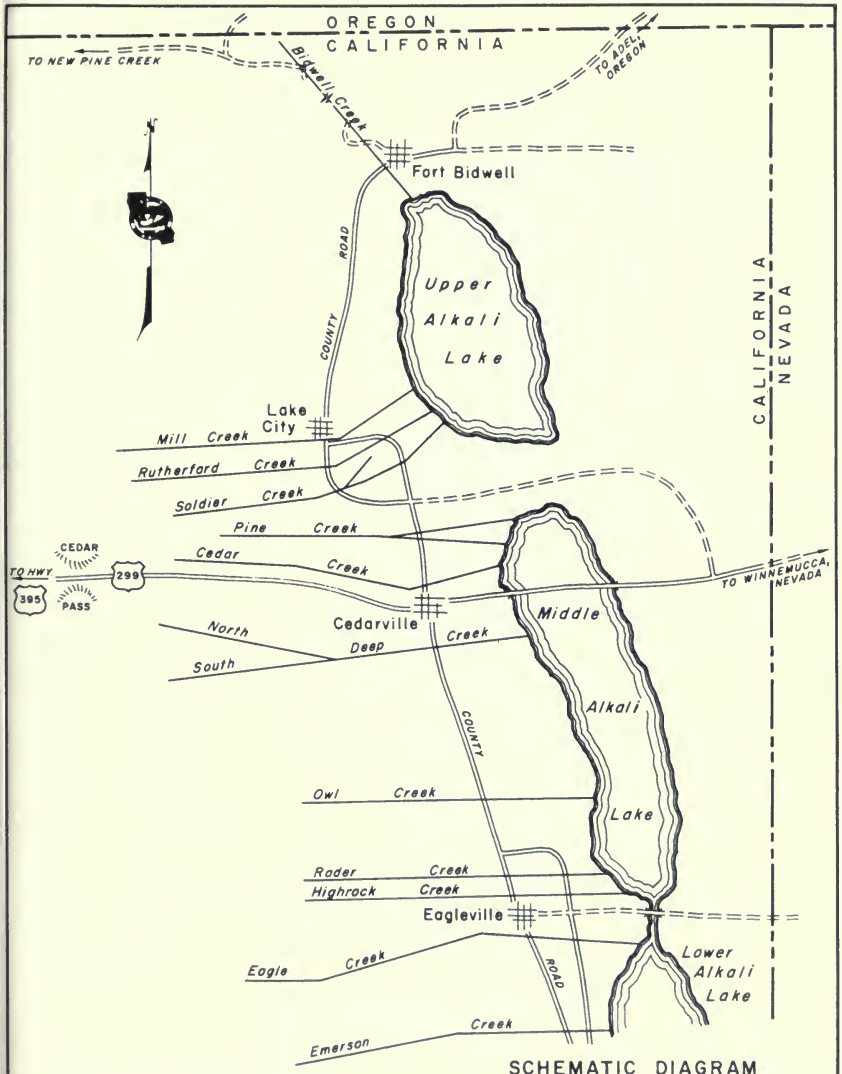
1870 Daily Mean Discharge in Cubic Feet Per Second

TABLE 52

EMERSON CREEK ABOVE ALL DIVERSIONS

Day	March	April	May	June	July	August	September	Day
1								1
2								2
3								3
4								4
5								5
6								6
7								7
8								8
9								9
10								10
11								11
12								12
13								13
14								14
15			NO RECORD AVAILABLE FOR 1870 SEASON					15
16								16
17								17
18								18
19								19
20								20
21								21
22								22
23								23
24								24
25								25
26								26
27								27
28								28
29								29
30								30
31								31
Mean								Mean
Runoff In Acre-Feet								Runoff In Acre-Feet

FIGURE 17



SCHEMATIC DIAGRAM
OF SURPRISE VALLEY
WATERMASTER SERVICE AREA

△ Permenent Recorder Station

March 15 through July 9
(major season of use)

(5) G. Peterson 0.38 cfs
C. Bucher 0.45 cfs
Sweeney 0.07 cfs

(6) Sweeney 0.18 cfs

(7) G. Peterson 0.50 cfs

(8) McConnaughy 7.24 cfs *
Town Users 0.06 cfs

(9) Conlan 7.63 cfs
Town Users 0.22 cfs

(10) Carey 6.13 cfs
C. Bucher 0.66 cfs
P. Peterson 0.44 cfs
Town Users 0.30 cfs

(11) C. Bucher 0.38 cfs

(12) U.S. Indian Service 0.46 cfs
Green 0.14 cfs
Baty 0.12 cfs

(13) McConnaughy 5.24 cfs *
Town Users 0.44 cfs

(15) Fee 8.94 cfs
Sagehorn 1.34 cfs
O'Callaghan 2.88 cfs
Toney 0.42 cfs

(17) Kober 0.05 cfs

(20) Sagehorn 0.88 cfs

(19A) (20) (20A) Carey 1.43 cfs

(21) Sagehorn 1.39 cfs

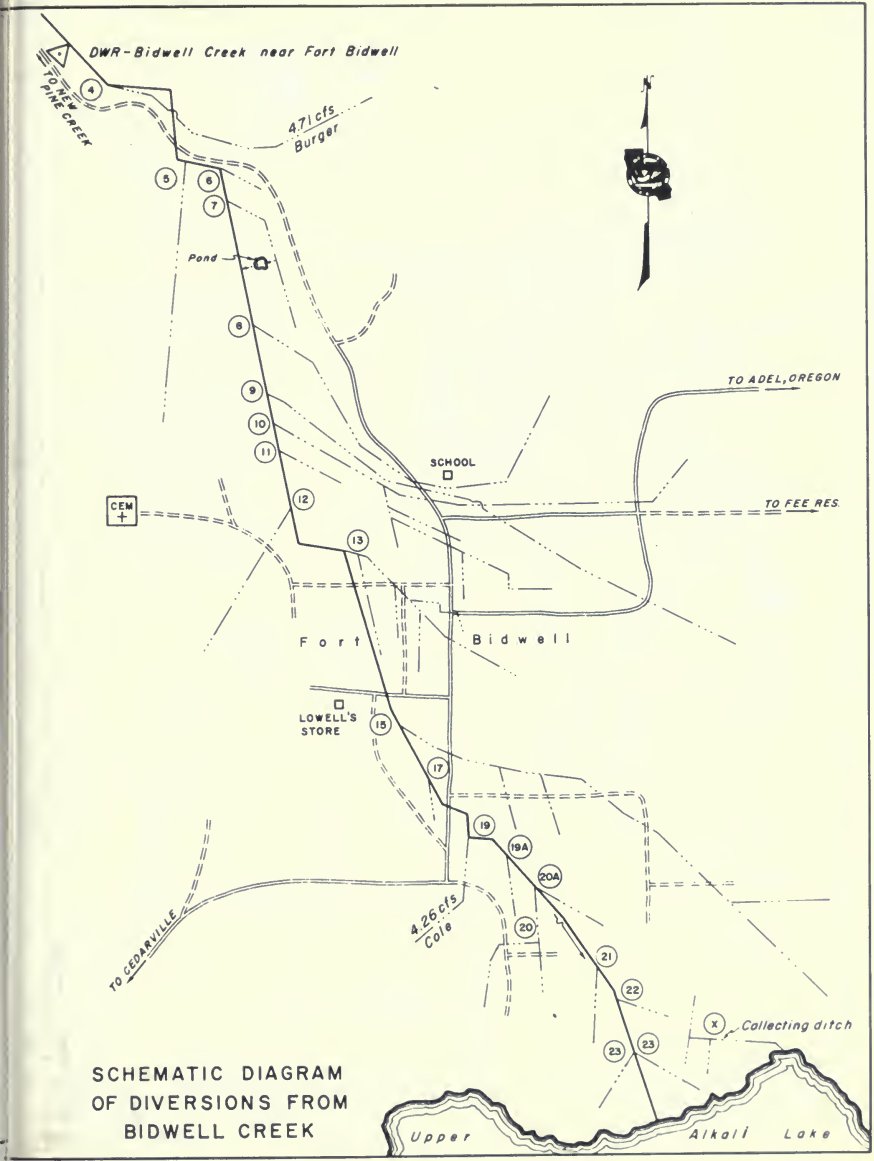
(22) O'Callaghan 0.38 cfs

(23) Sagehorn 1.79 cfs

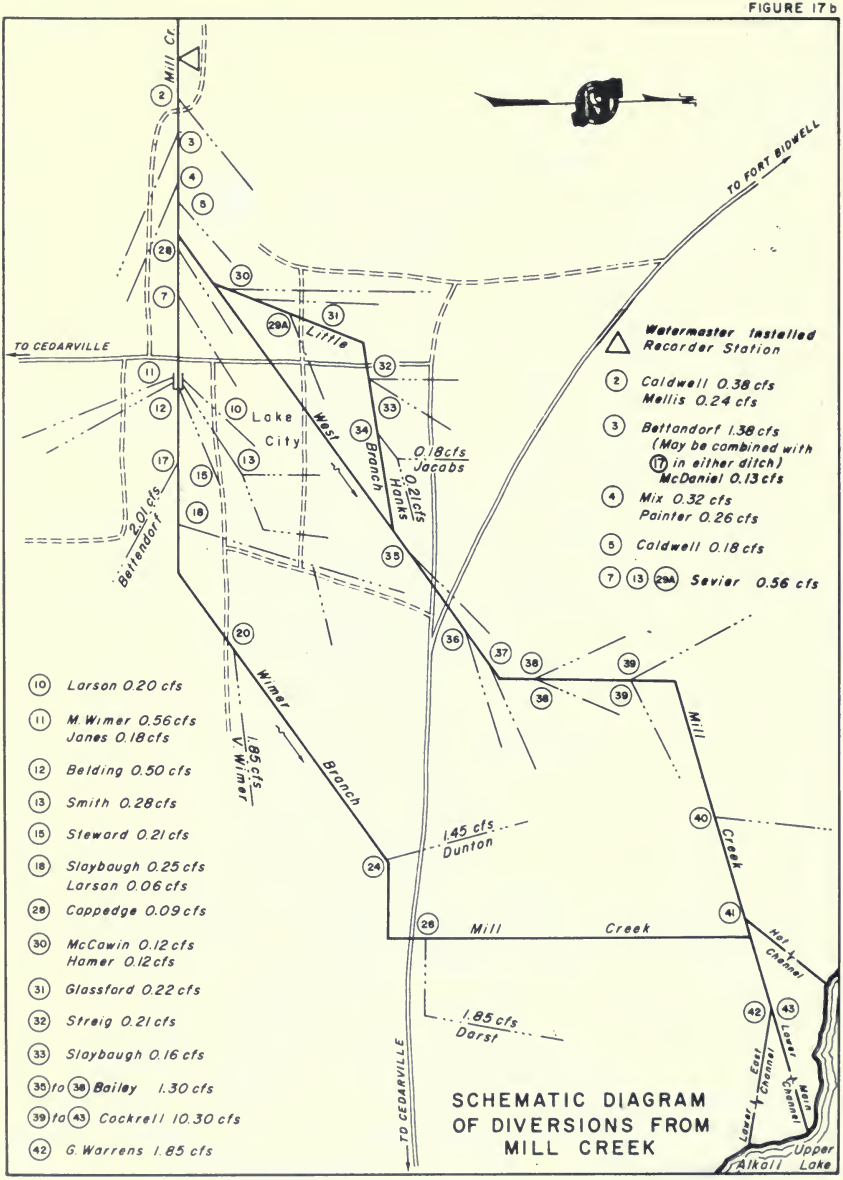
(X) Sagehorn — If flow is less than 3.82 cfs, deficiency is made up by additional diversion through (15) if Fee Ranch allotment is satisfied.

* May be used in either ditch

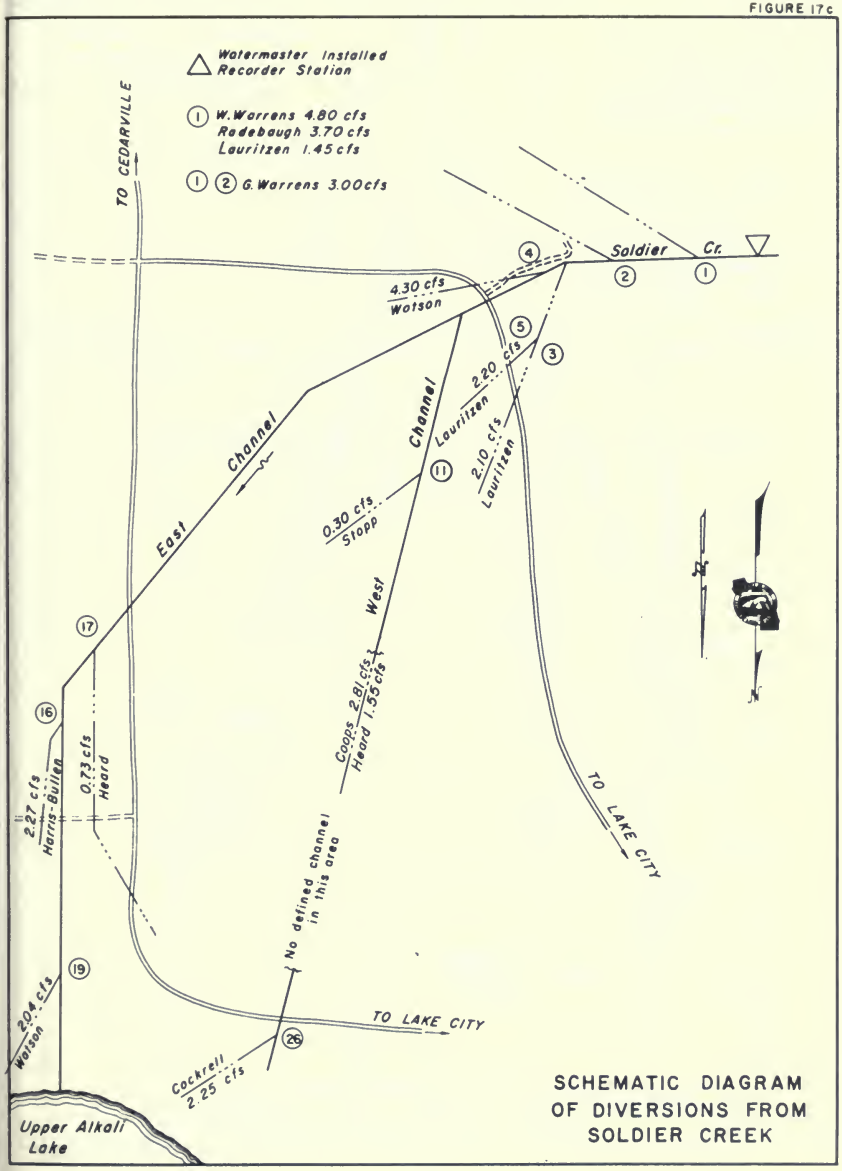
NOTE: Sagehorn and O'Callaghan waters may be used in any of their ditches at discretion of user and watermaster.

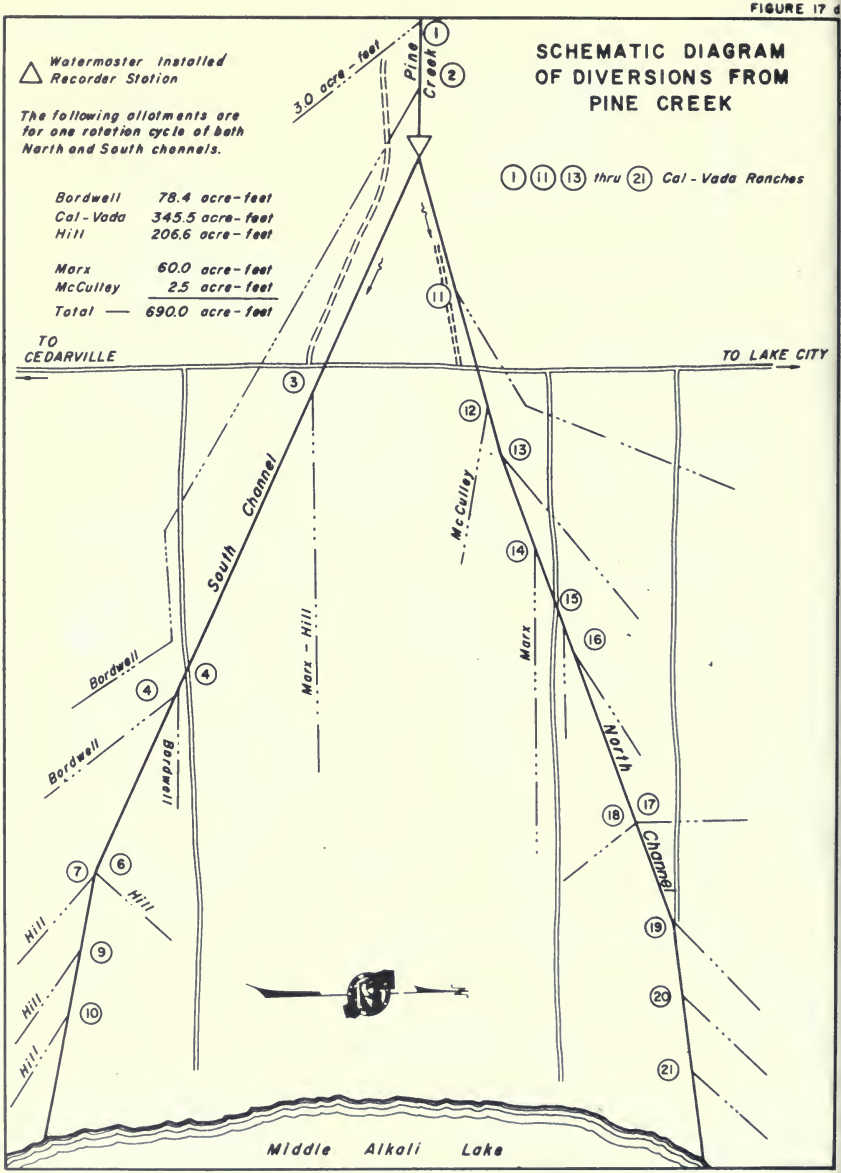


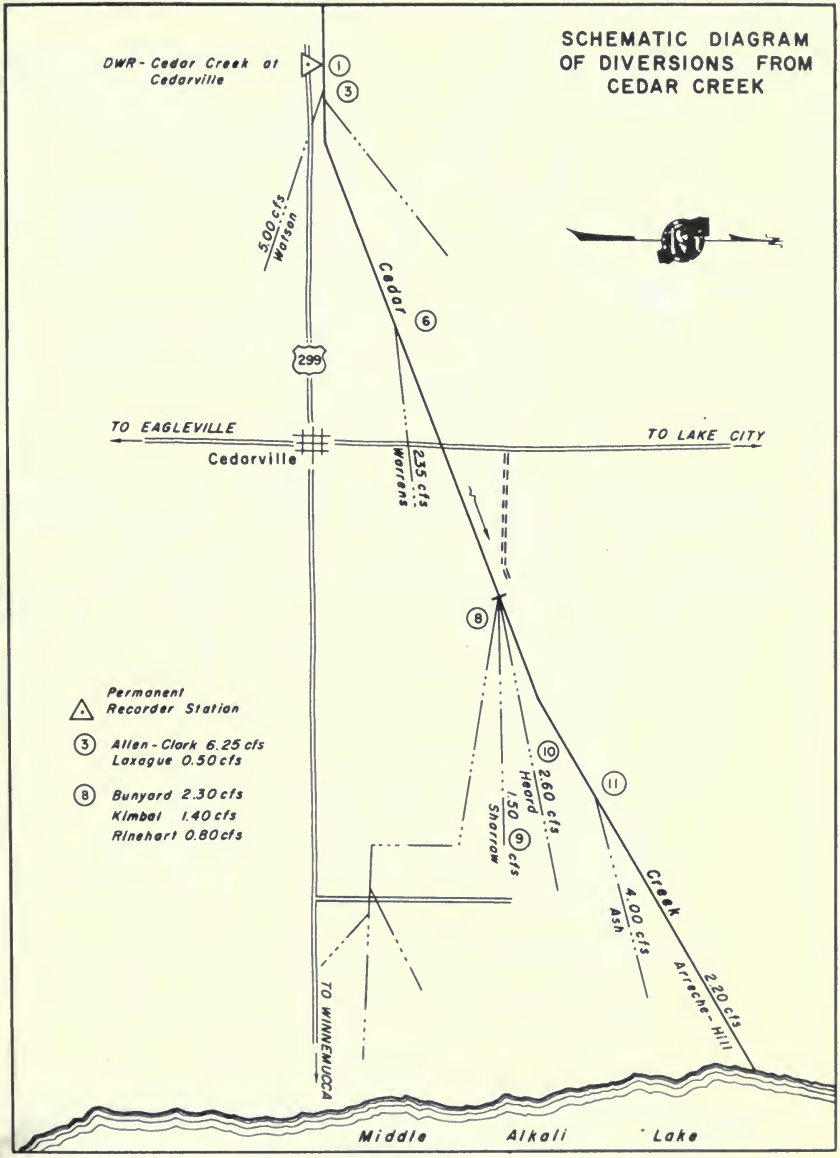
SCHEMATIC DIAGRAM OF DIVERSIONS FROM BIDWELL CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM MILL CREEK


Watermaster Installed Recorder Station
① W. Warrens 4.80 cfs
Redebaugh 3.70 cfs
Lauritzen 1.45 cfs
① ② G. Warrens 3.00 cfs
TO CEDARVILLE
Soldier Cr.
4.30 cfs Watson
2.20 cfs Lauritzen
2.10 cfs Lauritzen
East Channel
West Channel
0.30 cfs Stopp
Coops 2.81 cfs
Heard 1.55 cfs
2.27 cfs Harris-Bullen
0.73 cfs Heard
No defined channel in this area
TO LAKE CITY
TO LAKE CITY
2.04 cfs Watson
Cockrell 2.25 cfs
Upper Alkali Lake
SCHEMATIC DIAGRAM OF DIVERSIONS FROM SOLDIER CREEK


SCHEMATIC DIAGRAM OF DIVERSIONS FROM PINE CREEK
Watermaster Installed Recorder Station
The following allotments are for one rotation cycle of both North and South channels.
Bordwell 78.4 acre-feet
Cal-Vada 345.5 acre-feet
Hill 206.6 acre-feet
Marx 60.0 acre-feet
McCulley 2.5 acre-feet
Total — 690.0 acre-feet
1 11 13 thru 21 Cal-Vada Ranches
3.0 cfs
Pine Creek
TO CEDARVILLE
TO LAKE CITY
South Channel
North Channel
Bordwell
Hill
Marx
McCulley
Middle Alkali Lake


SCHEMATIC DIAGRAM OF DIVERSIONS FROM CEDAR CREEK
DWR - Cedar Creek at Cedarville
1
3
500 c.f.s. Watson
Cedar
6
299
TO EAGLEVILLE
TO LAKE CITY
Cedarville
235 c.f.s. Warrens
8
Permanent Recorder Station
3 Allen - Clark 6.25 cfs
Laxague 0.50 cfs
8 Bunyard 2.30 cfs
Kimbal 1.40 cfs
Rinehart 0.80 cfs
10
260 c.f.s. Heard
150 c.f.s. Sharrow
9
11
Creek
4.00 c.f.s. Ash
220 c.f.s. Arreche - Hill
TO WINNEMUCCA
Middle Alkali Lake

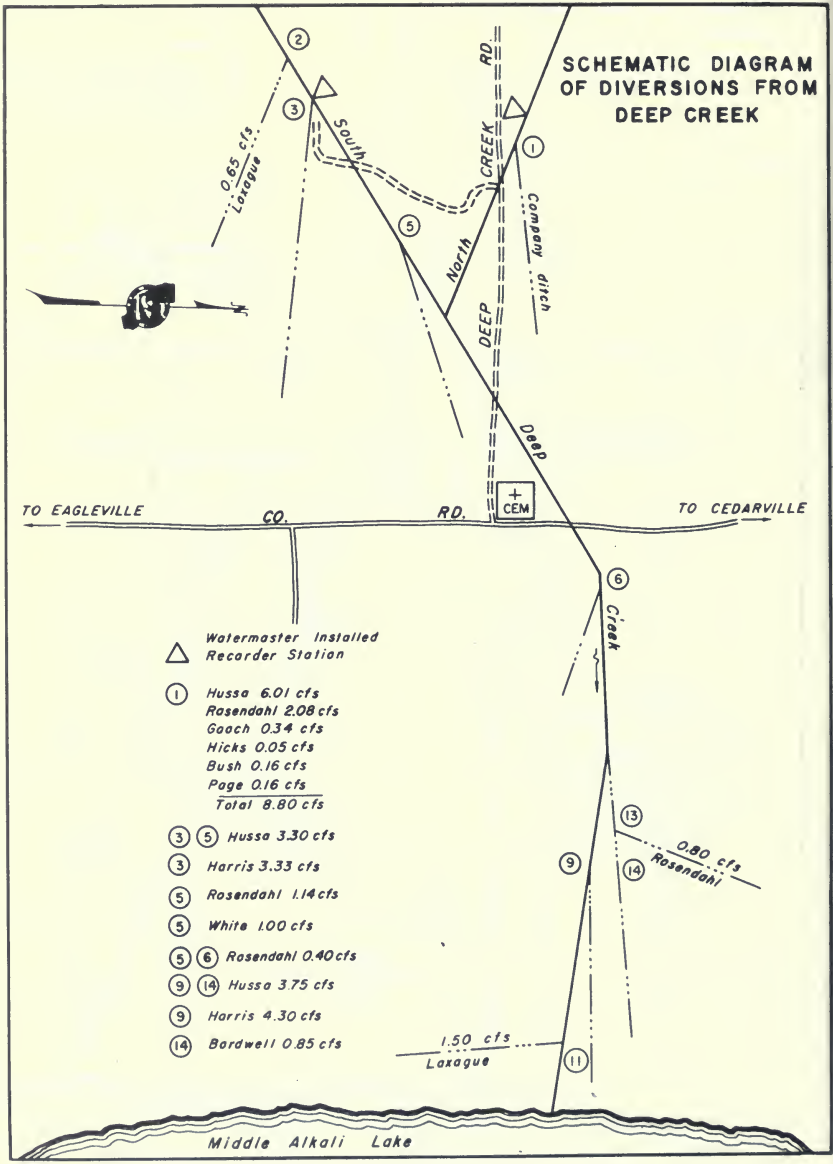
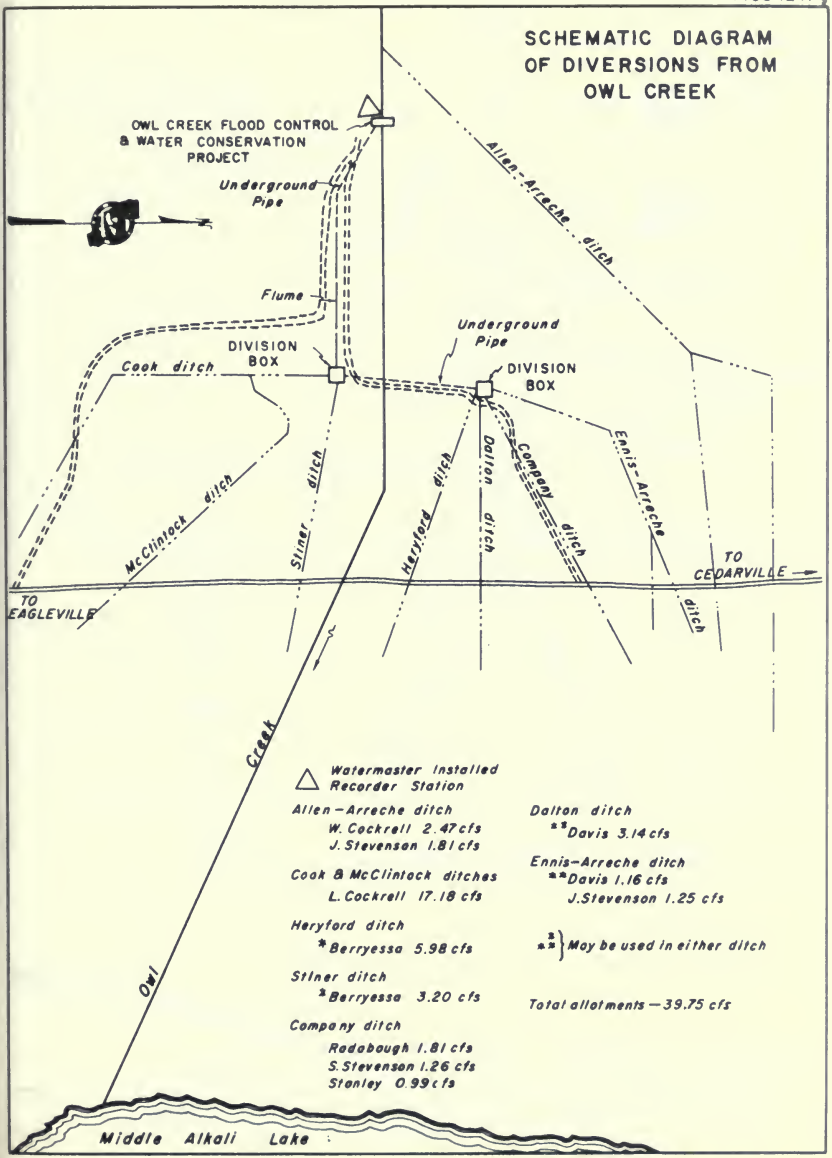
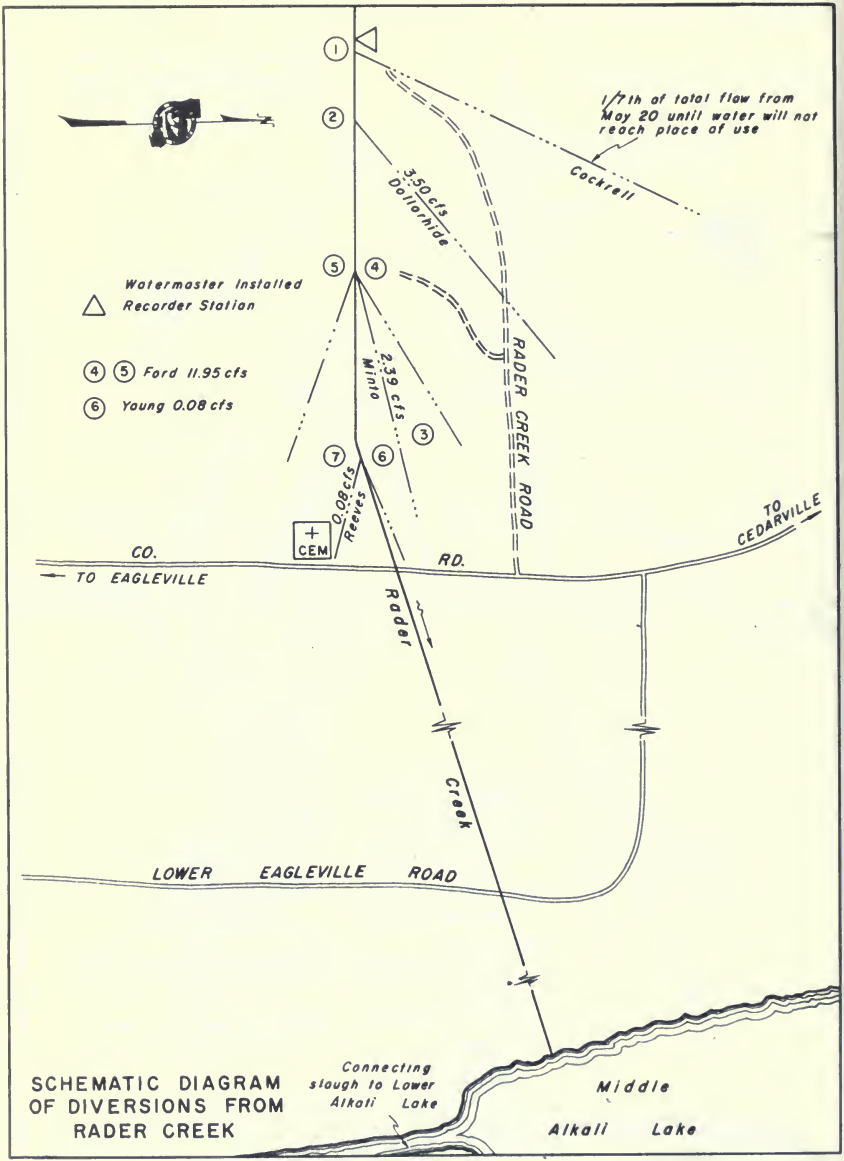

SCHEMATIC DIAGRAM OF DIVERSIONS FROM DEEP CREEK
0.65 cfs Laxague
South
CREEK
RD.
Company ditch
North
DEEP
DEEP
TO EAGLEVILLE
CO.
RD.
CEM
TO CEDARVILLE
Creek
Watermaster Installed
Recorder Station
(1) Hussa 6.01 cfs
Rosendahl 2.08 cfs
Gooch 0.34 cfs
Hicks 0.05 cfs
Bush 0.16 cfs
Page 0.16 cfs
Total 8.80 cfs
(3) (5) Hussa 3.30 cfs
(3) Harris 3.33 cfs
(5) Rosendahl 1.14 cfs
(5) White 1.00 cfs
(5) (6) Rosendahl 0.40 cfs
(9) (14) Hussa 3.75 cfs
(9) Harris 4.30 cfs
(14) Bardwell 0.85 cfs
0.80 cfs Rosendahl
1.50 cfs Laxague
Middle Alkali Lake

FIGURE 17 g


SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
OWL CREEK
OWL CREEK FLOOD CONTROL
& WATER CONSERVATION
PROJECT
Underground
Pipe
Flume
DIVISION
BOX
Cook ditch
McClintock ditch
Stiner ditch
Underground
Pipe
DIVISION
BOX
Heryford ditch
Dalton ditch
Company ditch
Allen-Arreche ditch
Ennis-Arreche
ditch
TO
CEDARVILLE
TO
EAGLEVILLE
Owl
Creek
Middle Alkali Lake
Watermaster Installed
Recorder Station
Allen-Arreche ditch
W. Cockrell 2.47 cfs
J. Stevenson 1.81 cfs
Cook & McClintock ditches
L. Cockrell 17.18 cfs
Heryford ditch
* Berryessa 5.98 cfs
Stiner ditch
* Berryessa 3.20 cfs
Company ditch
Redabough 1.81 cfs
S. Stevenson 1.26 cfs
Stanley 0.99 cfs
Dalton ditch
** Davis 3.14 cfs
Ennis-Arreche ditch
** Davis 1.16 cfs
J. Stevenson 1.25 cfs
*, ** } May be used in either ditch
Total allotments — 39.75 cfs



SCHEMATIC DIAGRAM OF DIVERSIONS FROM RADER CREEK

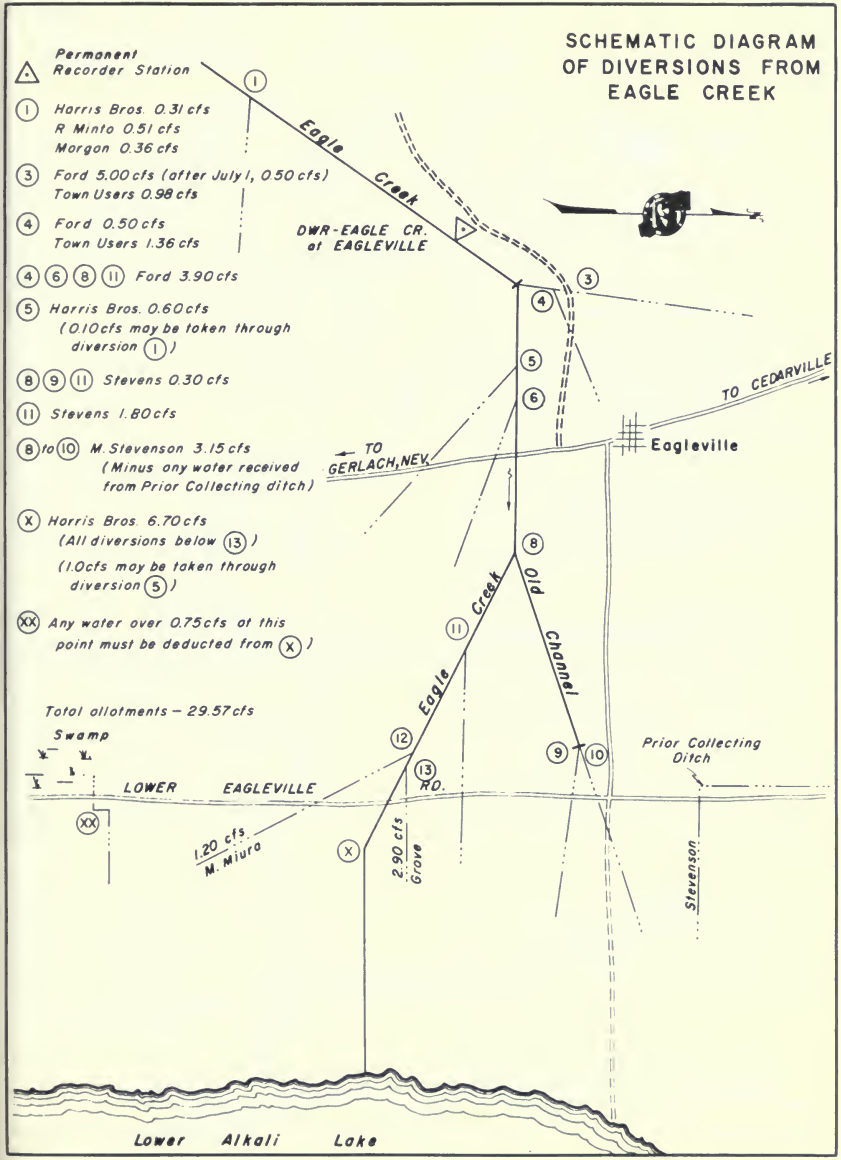
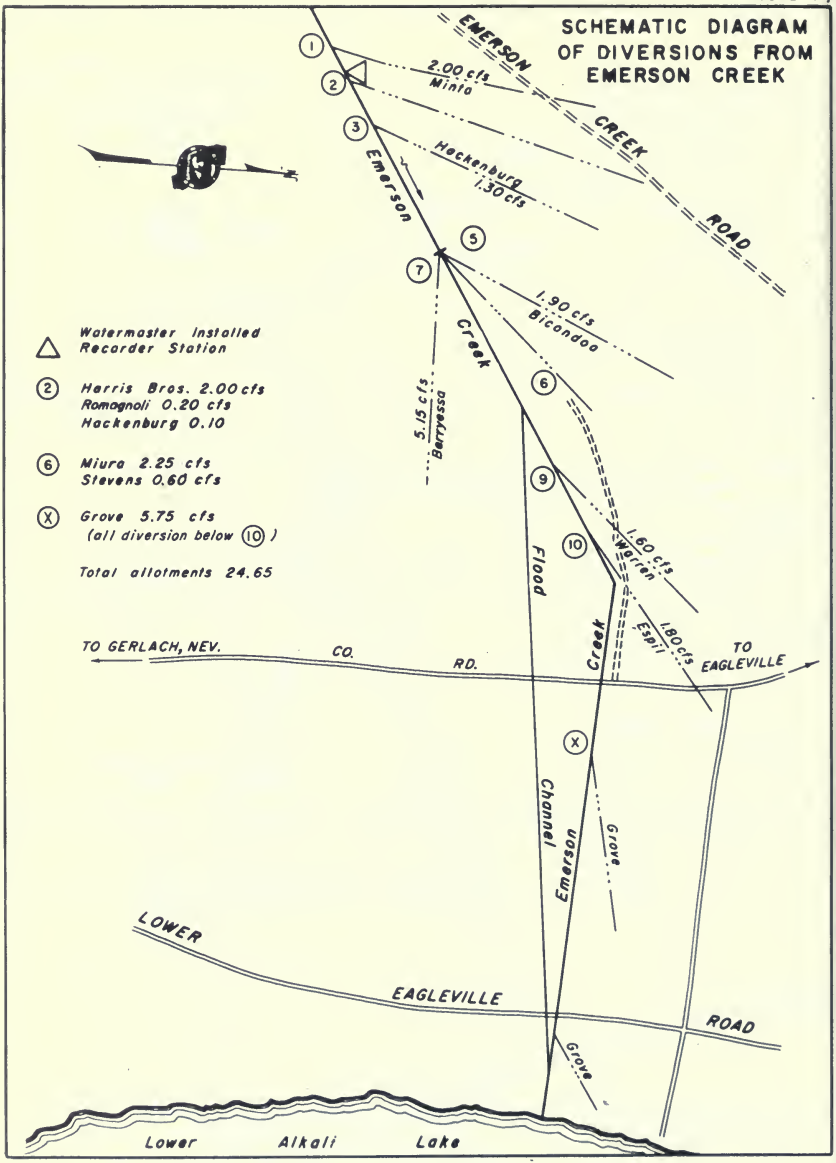

SCHEMATIC DIAGRAM OF DIVERSIONS FROM EAGLE CREEK
Permanent Recorder Station
(1) Harris Bros. 0.31 cfs
R Minto 0.51 cfs
Morgan 0.36 cfs
(3) Ford 5.00 cfs (after July 1, 0.50 cfs)
Town Users 0.98 cfs
(4) Ford 0.50 cfs
Town Users 1.36 cfs
(4)(6)(8)(11) Ford 3.90 cfs
(5) Harris Bros. 0.60 cfs
(0.10 cfs may be taken through diversion (1))
(8)(9)(11) Stevens 0.30 cfs
(11) Stevens 1.80 cfs
(8) to (10) M. Stevenson 3.15 cfs
(Minus any water received from Prior Collecting ditch)
(X) Harris Bros. 6.70 cfs
(All diversions below (13))
(1.0 cfs may be taken through diversion (5))
(XX) Any water over 0.75 cfs at this point must be deducted from (X))
Total allotments – 29.57 cfs
Eagle Creek
DWR-EAGLE CR. at EAGLEVILLE
TO CEDARVILLE
TO GERLACH, NEV.
Eagleville
Old Channel
Eagle Creek
Swamp
LOWER EAGLEVILLE RD.
Prior Collecting Ditch
1.20 cfs M. Miura
2.90 cfs Grove
Stevenson
Lower Alkali Lake

FIGURE 17 j


SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
EMERSON CREEK
EMERSON
CREEK
ROAD
2.00 cfs
Minto
Hackenburg
1.30 cfs
Emerson
Creek
1.90 cfs
Bicondoa
5.15 cfs
Barryessa
Watermaster Installed
Recorder Station
(2) Harris Bros. 2.00 cfs
Romagnoli 0.20 cfs
Hackenburg 0.10
(6) Miura 2.25 cfs
Stevens 0.60 cfs
(X) Grove 5.75 cfs
(all diversion below (10))
Total allotments 24.65
1.60 cfs
Warren
Flood
Creek
1.80 cfs
Espil
TO GERLACH, NEV.
CO.
RD.
TO
EAGLEVILLE
Grove
Channel
Emerson
LOWER
EAGLEVILLE
ROAD
Grove
Lower
Alkali
Lake

Susan River Watermaster Service Area

The Susan River service area is located in the southern part of Lassen County in the vicinity of Susanville. There are 160 water right owners in the service area with total allotments of 351.732 cubic feet per second. The primary place of use is in Honey Lake Valley between Susanville and the northwest shore of Honey Lake, a distance of about 25 miles. The valley floor is at an elevation of about 4,000 feet. The source of supply is comprised of three stream systems: Susan River and tributaries, Baxter Creek and tributaries, and Parker Creek.

Susan River originates on the east slope of the Sierra Nevada immediately east of Lassen National Park at an elevation of about 7,900 feet. Its channel runs easterly from Silver Lake through McCoy Flat Reservoir, the town of Susanville, and then to Honey Lake.

Susan River has four major tributaries: Piute Creek, entering from the north at Susanville; Gold Run and Lassen Creeks, entering from the south between Susanville and Johnstonville; and Willow Creek, entering from the north above Standish. Gold Run and Lassen Creeks rise on the north slope of Diamond Mountain at an elevation of about 7,600 feet. The watersheds of Piute and Willow Creeks are on the south slopes of Round Valley Mountain at lower elevations.

A short distance below its confluence with Willow Creek the Susan River divides into three channels: Tanner Slough Channel on the north, Old Channel in the middle, and Dill Slough Channel on the south. Hartson Slough and Whitehead Slough divert from Dill Slough on its south bank farther downstream.

The Baxter Creek stream system is located in Honey Lake Valley on the east slope of the Sierra Nevada Mountains, about 10 miles southeast of Susanville. The principal creeks in the system are: Baxter Creek, which rises in the extreme western portion of the basin and flows in an easterly direction, and Elesian, Sloss, and Bankhead Creeks, which are tributaries of Baxter Creek from the south.

Parker Creek is situated in Honey Lake Valley on the east slope of the Sierra Nevada Mountains about 15 miles southeast of Susanville. It rises on the east slope of Diamond Mountain and flows in an easterly direction for about 5 miles into Honey Lake.

A schematic drawing of each major stream system within the Susan River service area is presented as Figures 18 through 18e, pages 147 through 154.

Water Supply

The water supply in the Susan River service area is obtained from two major sources, snowmelt runoff and springs. Snowpack on the Willow Creek Valley and Piute Creek watersheds, which embrace more than one-half of the Susan River stream system, melts early in the spring and is usually depleted by May 1. Irrigation requirements from this portion of the stream system are then almost entirely dependent on the flow of springs that are relatively constant throughout the year.

Under average flow conditions, Lassen, Gold Run, Baxter, and Parker Creeks, and Susan River above Susanville are sustained by snowmelt runoff until early June. The flow from perennial springs in this portion of the system is comparatively small.

The Lassen Irrigation District stores supplemental water in Hog Flat and McCoy Reservoirs, located on the

headwaters of the Susan River. This stored water is released into the Susan River Channel and commingled with the natural flow, usually during June and July. It is then rediverted into Lake Leavitt for further distribution by the irrigation district.

Records of daily mean discharge of the several stream gaging stations in the service area are presented in Tables 53 through 57, pages 144 through 146.

Method of Distribution

Irrigation in the Susan River service area is accomplished by placing dams in the main channels, thus raising the water level for subsequent diversion into canals and ditches. These diversion dams are relatively large on the Susan River Channel and much smaller on the tributaries. Wild flooding is the most common method of irrigation in practice. Portions of the irrigated lands have been leveled, permitting a more efficient use of water by using border checks and furrows. Subirrigation occurs in some areas incidental to surface irrigation or as a result of seepage from ditches and creek channels.

The Lassen Irrigation Company is entitled to divert or store up to the present capacity of its reservoirs from the natural flow of Susan River between March 1 and July 1 of each year when the flow of Susan River immediately above Willow Creek is more than 5 cubic feet per second in spite of the allotments granted to users in Schedules 3 and 6 and to users of third priority class in Schedule 5 of the Susan River decree. When the flow of the Susan River immediately above Willow Creek is below the required amount, the watermaster then measures the inflow to McCoy Flat Reservoir, and if available, releases the amount required. A transportation loss of 15 percent, or a minimum of two cubic feet per second, is deducted from all water that is transferred from Lassen Irrigation Company upstream storage reservoirs to Lake Leavitt.

The several decrees (see Table 1) which apply to the Susan River service area establish the following number of priority classes for the major stream systems and distribution areas: Baxter Creek - five; Parker Creek - four; Gold Run Creek - three; Lassen Creek - two; Piute and Hills Creek - one; Willow Creek - two; and Susan River - three. Geographical features are such that the Susan River, Willow Creek and Lower Susan River areas are subject to interrelated priorities.

1970 Distribution

Watermaster service began in the Susan River service area on April 1 and continued until September 30. Lester Lighthall, Water Resources Technician II, was watermaster during this period.

The available natural water supply throughout the service area was about average. The cool spring weather delayed much of the runoff, and, as a result, the irrigation season was well above normal.

Parker Creek. The available water supply in Parker Creek was sufficient to satisfy all allotments (four priorities) until June 20. From June 20 to July 15 the flow decreased rapidly to first priority allotments. From July 15 throughout the remainder of the season only first priority allotments were served.

Baxter Creek. The available water supply was sufficient to satisfy third priority allotments (five priorities) until May 15. The flow decreased from May 15 to July 1 when approximately 60 percent of second priority allotments were supplied. The flow at Diversion No. 75 dropped to 1 cubic foot per second on July 31. In accordance with the decree, all of the flow at this point was diverted into Long ditch for stockwater use.

From July 31 throughout the remainder of the season only stockwater allotments were served.

Lassen-Holtzclaw Creeks. The available water supply in Lassen-Holtzclaw Creeks was sufficient to meet all allotments (two priorities) until June 18. The flow decreased to first priority allotments on July 12. From July 12 throughout the remainder of the season the Tangeman Ranch was entitled to all of the water available in the stream.

Hills Creek. The available water supply in Hills Creek was sufficient to supply all allotments (one priority) until June 29, and all storage facilities on Hills Creek were filled by this date. First priority water declined until August 1 when only stockwater was available to the Amesbury Ranch.

Gold Run Creek. The available water supply in Gold Run Creek was sufficient to supply all allotments (three priorities) until July 3. Between July 3 and August 9, the flow decreased steadily. After August 9 the flow remained reasonably constant at about 10 percent of second priority allotments.

Piute Creek. The available water supply in Piute Creek was sufficient to satisfy all allotments (one priority) and provide a small surplus flow to the Susan River throughout the season.

Willow Creek. The available water supply in Willow Creek was sufficient to supply all allotments (two priorities) throughout the season.

Susan River. The available water supply in the Susan River was sufficient to supply all allotments in Schedule 6 (three priorities) until June 23. As the flow receded, Schedule 6 was terminated for the season. All allotments in Schedule 3 (three priorities - Lower Susan River) were satisfied until mid-July. Throughout the remainder of the season there was enough water for about 60 percent of second priority allotments in this schedule.

All allotments in Schedule 5 (three priorities - Upper Susan River area) were satisfied until June 30. The flow receded until July 10 when there was enough water for about 15 percent of the second priority allotments. Throughout the remainder of the season the flow remained constant.

Lassen Irrigation Company Reservoirs.

The Susan River decree allows the Lassen Irrigation Company's McCoy Flat and Lake Leavitt Reservoirs to store surplus water during the winter and spring months. Once filled, or if a shortage occurs among downstream water right owners, the natural flow in the Susan River above McCoy Flat Reservoir must be released.

During spring runoff these two reservoirs filled to capacity. Shortages began to occur in early June so controlled releases began on June 9. The company requested that its releases from Hog Flat Reservoir begin so that the water elevation in Lake Leavitt could be kept high enough to allow irrigation to continue out of High Canal. Releases continued until July 23 at which time Hog Flat Reservoir was emptied. Releases from McCoy Flat Reservoir began on June 14 and continued until August 30 at which time there was sufficient water in Lake Leavitt for Lassen Irrigation Company to complete their irrigation season.

Special Occurrences.

The diversion dam in the Upper Susan River which supplies water to the Old Channel and Jensen Slough was badly damaged during the high water in January 1970. Only temporary repairs were made during the summer of 1970, and final repairs on the Woodstock Dam were completed in November of that year. The Lassen Irrigation Company reservoirs were filled during the winter months, which contributed to a better than average irrigation season for the Susan River water users.

SUSAN RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 53

SUSAN RIVER AT SUSANVILLE

Day	March	April	May	June	July	August	September	Day
1	200	183	107	115	94	13	19	1
2	181	187	109	108	91	18	10	2
3	160	179	121	100	90	21	9.2	3
4	135	168	140	94	96	29	8.8	4
5	124	169	157	92	90	35	9.7	5
6	138	181	173	91	87	49	9.4	6
7	185	190	181	83	83	56	9.1	7
8	293	191	180	78	80	55	8.7	8
9	207	213	215	84	75	52	8.2	9
10	188	221	282	132	74	54	7.8	10
11	165	226	259	112	71	57	7.5	11
12	159	218	248	104	67	58	7.4	12
13	175	212	235	108	63	50	7.3	13
14	214	214	216	118	61	46	7.8	14
15	216	198	204	111	67	41	7.9	15
16	199	183	204	108	66	37	7.8	16
17	195	169	215	102	63	32	7.7	17
18	170	157	222	97	62	34	7.5	18
19	158	140	219	95	45	51	7.7	19
20	151	114	213	106	36	50	7.8	20
21	147	112	203	107	24	58	7.8	21
22	144	105	195	112	17	59	7.8	22
23	142	100	190	101	14	61	7.8	23
24	144	98	181	98	11	71	7.7	24
25	147	95	175	98	8.8	74	7.7	25
26	143	118	173	102	8.1	73	7.8	26
27	139	124	169	112	7.4	73	7.9	27
28	140	115	160	107	7.2	73	7.8	28
29	146	110	151	130	7.0	75	7.5	29
30	149	113	143	98	7.0	73	7.5	30
31	152		128		7.0	59		31
Mean	167	160	186	103	50.9	51.1	8.4	Mean
Runoff In Acre-Feet	10280	9520	11440	6150	3130	3140	503	Runoff In Acre-Feet

TABLE 54

GOLD RUN CREEK NEAR SUSANVILLE

Day	March	April	May	June	July	August	September	Day
1		12*	9.5	24	5.5	2.3	1.8	1
2		12	15	23	5.3	2.3	1.8	2
3		12	16	23	5.1	2.3	1.8	3
4		12	19	22	5.0	2.1	1.9	4
5		12	32	20	4.9	2.1	2.0	5
6		12	30	17	4.9	2.1	2.0	6
7		11	29	15	4.8	2.0	1.9	7
8		11	29	14	4.7	2.0	1.8	8
9		11	29	13	4.6	2.0	1.8	9
10		11	32	12	4.6	1.9	1.7	10
11		11	27	11	4.5	1.8	1.7	11
12		11	25	11	4.4	1.7	1.7	12
13		11	21	11	4.2	1.7	1.7	13
14		11	23	10	3.9	1.7	1.8	14
15		11	27	9.5	3.8	1.7	1.9	15
16		11	45	9.2	3.7	1.8	1.9	16
17		11	84	8.3	3.5	1.8	1.8	17
18		11	78	8.2	3.3	1.7	1.8	18
19		11	69	8.1	3.1	1.8	1.9	19
20		11	58	8.1	2.9	1.8	1.9	20
21		11	50	7.8	2.7	1.4	1.9	21
22		11	50	7.3	2.6	1.4	1.9	22
23		10	50	6.8	2.5	1.4	1.8	23
24		10	47	6.5	2.4	1.4	1.8	24
25		10	50	6.4	2.4	1.4	1.8	25
26		10	56	6.8	2.3	1.4	1.8	26
27		10	56	7.5	2.2	1.4	1.8	17
28		9.5	42	7.1	2.1	1.5	1.8	28
29		9.2	38	7.5	2.1	1.8	1.8	29
30		8.2	32	6.9	2.1	1.8	1.8	30
31			26		2.2	1.8		31
Mean		10.9	37.8	11.6	3.6	1.8	1.8	Mean
Runoff In Acre-Feet		648	2320	690	223	108	109	Runoff In Acre-Feet

* Beginning of Record

SUSAN RIVER WATERMASTER SERVICE AREA

1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 55

SUSAN RIVER AT JOHNSTONVILLE BRIDGE

Day	March	April	May	June	July	August	September	Day
1		186*	63	69	21	4.1	3.3	1
2		186	80	80	19	4.0	3.2	2
3		186	186	53	18	4.1	3.0	3
4		186	**	48	19	4.1	2.9	4
5		183		48	18	4.1	2.9	5
6		187		47	18	4.1	2.9	6
7		172		42	16	4.1	3.3	7
8		76		40	15	4.3	3.1	8
9		88		45	13	4.3	2.8	9
10		176		47	12	4.3	2.8	10
11		180		38	12	4.4	2.8	11
12		176		42	12	4.4	2.9	12
13		164		45	11	4.3	2.9	13
14		159		45	11	4.2	2.9	14
15		150	**	44	11	4.2	3.1	15
18		143	200	41	11	4.0	4.0	16
17		132	195	40	11	3.8	3.7	17
18		114	195	37	10	3.5	3.7	18
19		98	195	35	10	3.5	3.7	19
20		75	181	33	9.0	3.5	3.7	20
21		71	179	32	7.8	3.5	4.0	21
22		67	178	30	6.4	3.7	4.5	22
23		67	154	27	5.7	3.7	5.0	23
24		62	140	23	4.6	3.7	5.5	24
25		58	132	21	4.4	3.7	6.0	25
26		75	123	22	4.3	3.5	6.0	26
27		89	116	27	4.3	3.5	6.0	27
28		82	107	25	4.4	3.5	6.0	28
29		72	97	30	4.5	3.5	8.0	29
30		72	86	26	4.4	3.5	8.0	30
31			79		4.3	3.5		31
Mean		124.4		38.7	10.7	3.9	4.0	Mean
Runoff In Acre-Feet		7400		2300	659	239	235	Runoff In Acre-Feet

* Beginning of Record

** Mean daily flow from May 4 to May 15 was in excess of 200 cfs.

TABLE 56

WILLOW CREEK NEAR SUSANVILLE

Day	March	April	May	June	July	August	September	Day
1	87	20	31	18	19	16	18	1
2	101	21	28	17	18	17	15	2
3	106	19	27	17	19	17	15	3
4	103	21	26	17	18	17	15	4
5	100	21	24	17	18	17	15	5
6	98	22	23	17	17	20	15	6
7	91	22	26	17	17	21	15	7
8	152	23	25	17	18	22	14	8
9	143	23	26	16	18	22	14	9
10	112	24	29	17	17	23	14	10
11	98	24	27	17	18	23	14	11
12	90	24	28	18	18	24	14	12
13	84	24	27	16	17	24	13	13
14	81	25	26	18	18	25	13	14
15	76	25	24	18	17	28	13	15
18	73	25	24	18	17	25	14	16
17	68	25	23	18	17	24	19	17
18	62	25	22	17	17	21	18	18
19	58	26	17	17	16	20	16	19
20	56	27	18	17	18	21	18	20
21	54	29	19	16	16	21	17	21
22	51	29	19	16	18	20	18	22
23	38	29	19	16	16	20	19	23
24	28	29	19	16	15	20	21	24
25	28	28	19	16	16	22	21	25
28	24	29	20	18	15	21	22	26
27	22	33	18	16	15	21	23	27
28	21	35	19	17	15	21	22	28
29	21	35	20	18	16	21	21	29
30	20	33	20	19	16	21	21	30
31	20		18		16	21		31
Mean	69.8	25.8	22.9	17.1	16.8	21.1	16.9	Mean
Runoff In Acre-Feet	4290	1540	1410	1020	1040	1300	1010	Runoff In Acre-Feet

SUSAN RIVER WATERMASTER SERVICE AREA

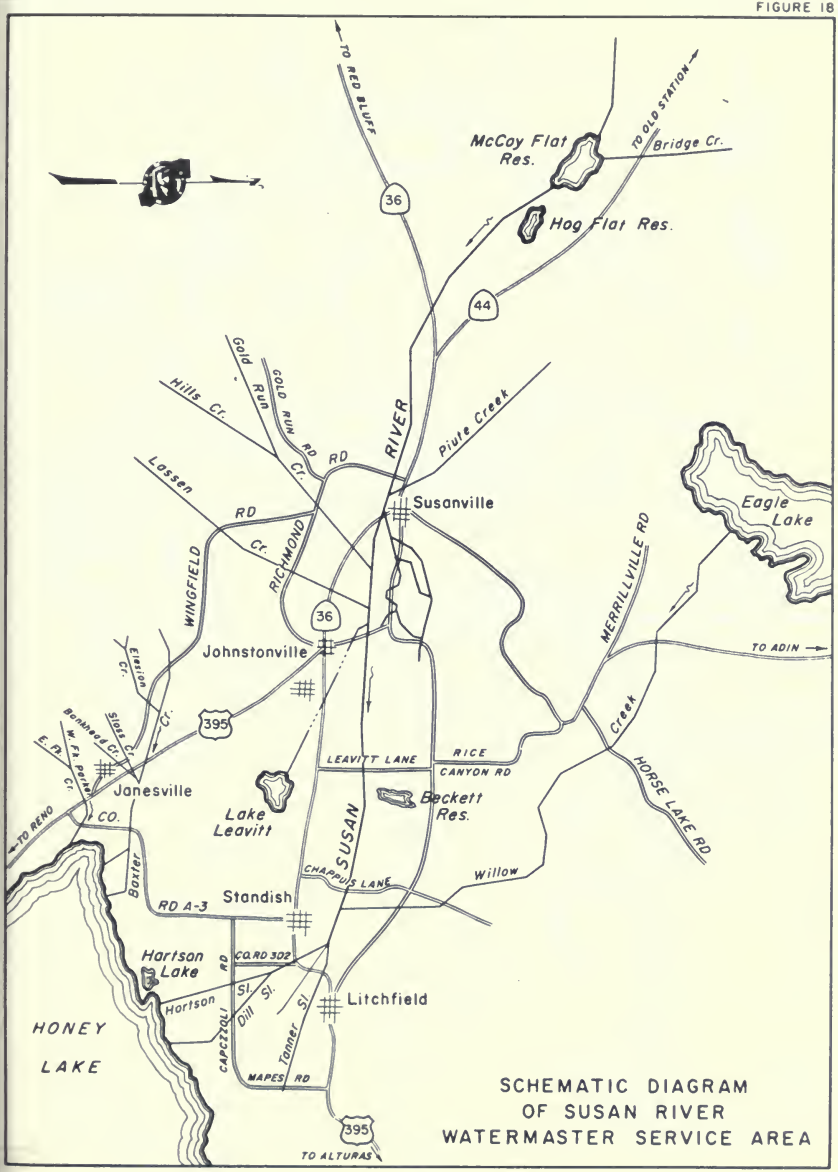
1970 Daily Mean Discharge in Cubic Feet Per Second

TABLE 57

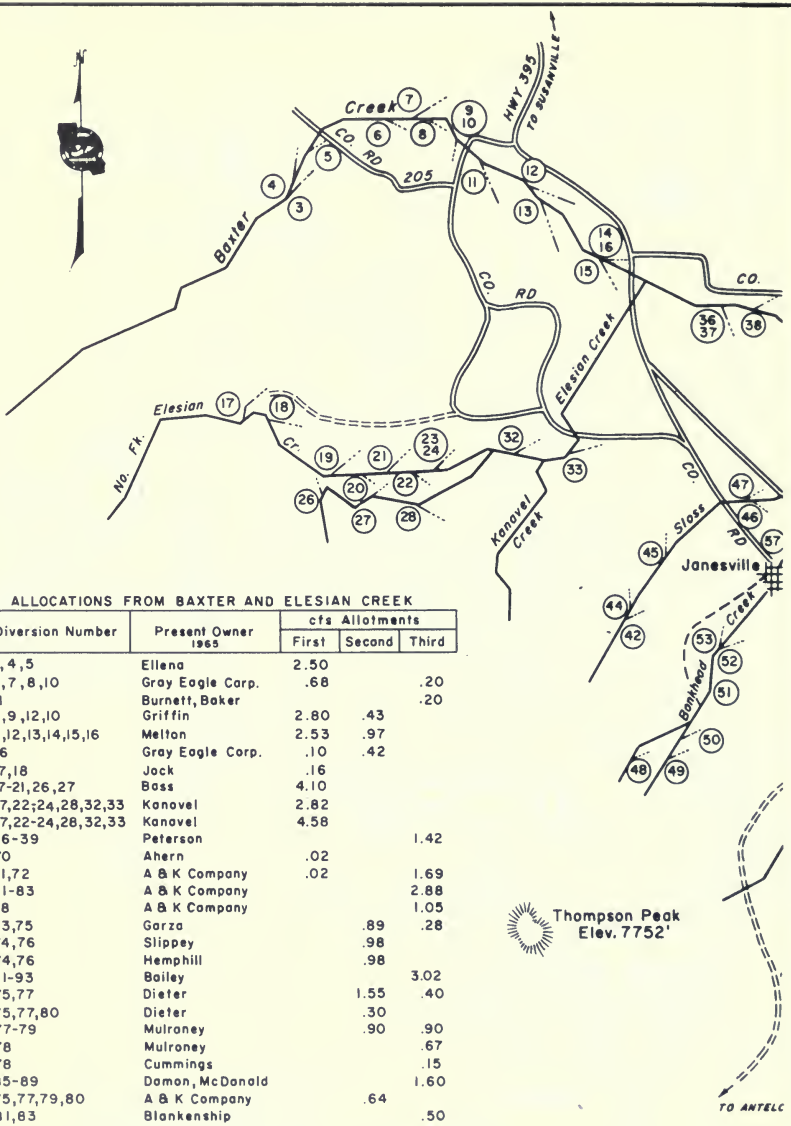
OPERATION OF McCOY AND HOG FLAT RESERVOIRS

Day	McCoy Flat Res. Inflow from Susan River	McCoy Flat Res. Releases to Susan River			Hog Flat Res. Releases to Susan River		Transfer of Lassen Irrig. Dist. Water from McCoy Flat and Hog Flat Res. to Lake Leavitt				Day
	June	June	July	August	June	July	June	July	August	September	
1	48[1]		31	10		54	10[1]	74	0.0	29	1
2	46		32	13		54	10	71	3.4	7.3[2]	2
3	44		32	23		55	11	66	7.4	1.8[2]	3
4	42		29	28		58	16	66	15		4
5	40		32	46		56	16	66	21		5
6	38		30	60		53	23	64	25		6
7	38		29	56		51	23	63	27		7
8	34		28	50		49	26	62	29		8
9	32		30	50	29[3]	51	38	55	41		9
10	31		31	58	52	44	88	55	31		10
11	30		31	56	52	40	80	56	41		11
12	29		31	50	52	37	67	51	48		12
13	28		30	39	51	33	62	45	50		13
14	28	4.0[3]	40	33	50	30	64	40	62		14
15	27	4.0	50	28	50	24	70	36	56		15
16	21	5.0	51	14	52	17	68	35	42		16
17	15	12	45	17	51	11	80	32	38		17
18	10	16	29	43	50	9.0	55	29	37		18
19	5.5	27	17	46	54	7.0	54	23	38		19
20	4.6	36	0.0	52	56	5.0	82	19	47		20
21	3.5	37	0.0	55	56	3.0	71	7.4	42		21
22	2.4	35	0.0	57	56	2.0	66	5.3	50		22
23	2.0	36	0.0	67	56	1.0[5]	80	4.2	52		23
24	1.6	36	0.0	67	55		53	3.5	58		24
25	1.2	36	0.0	67	55		62	2.4	66		25
26	0.8	36	0.0	66	55		62	3.5	64		26
27	0.2[5]	35	0.0	66	54		72	1.4	66		27
28		34	0.0	65	54		72	0.7	63		28
29		34	0.0	65[4]	52		78	0.0	64		29
30		30	3.2	57[4]	52		75	0.0	64		30
31			7.2					0.0	64		31
Mean	22.3	26.8	20.6	46.8	52.0	32.3	52.6	33.6	42.3	12.7	Mean
Runoff in Acre-Feet	1190	9040	1270	2780	2270	1480	3130	2080	2600	78	Runoff in Acre-Feet

1/ Beginning of Record
2/ End of Record
3/ Beginning of Releases
4/ End of Releases
5/ End of Flow



SCHEMATIC DIAGRAM
OF SUSAN RIVER
WATERMASTER SERVICE AREA



ALLOCATIONS FROM BAXTER AND ELESIAN CREEK

Diversion Number	Present Owner 1965	cfs Allotments		
		First	Second	Third
3,4,5	Ellena	2.50		
6,7,8,10	Gray Eagle Corp.	.68		.20
11	Burnett, Baker			.20
8,9,12,10	Griffin	2.80	.43	
8,12,13,14,15,16	Melton	2.53	.97	
16	Gray Eagle Corp.	.10	.42	
17,18	Jock	.16		
17-21,26,27	Bass	4.10		
17,22-24,28,32,33	Kanovel	2.82		
17,22-24,28,32,33	Kanovel	4.58		
36-39	Peterson			1.42
70	Ahern	.02		
71,72	A & K Company	.02		1.69
81-83	A & K Company			2.88
78	A & K Company			1.05
73,75	Garza		.89	.28
74,76	Slippey		.98	
74,76	Hemphill		.98	
91-93	Bailey			3.02
75,77	Dieter		1.55	.40
75,77,80	Dieter		.30	
77-79	Mulroney		.90	.90
78	Mulroney			.67
78	Cummings			.15
85-89	Damon, McDonald			1.60
75,77,79,80	A & K Company		.64	
81,83	Blankenship			.50
84,90	Triaml Cattle Co.			1.81

ALLOCATIONS FROM SLOSS AND BANKHEAD CREEKS

Diversion Number	Present Owner 1965	cfs Allotments			
		First	Second	Third	Total
42	Bowersox	.02			0.02
44	Thornton	.002			0.002
45	Spears			.08	0.08
46	Grover	.10	1.10		1.20
46,47	Peterson	.10	1.10		1.20
48,49,50	Row	.02	.13		0.15
51	Holmes Pipeline	.08		.11	0.19
52,53,55	Pyle			.48	0.48
56,62	Ashmore	.25	3.23		3.48
63,65	Thomosson	.05		.30	0.35
66,67	Fritts	.06		.20	0.26

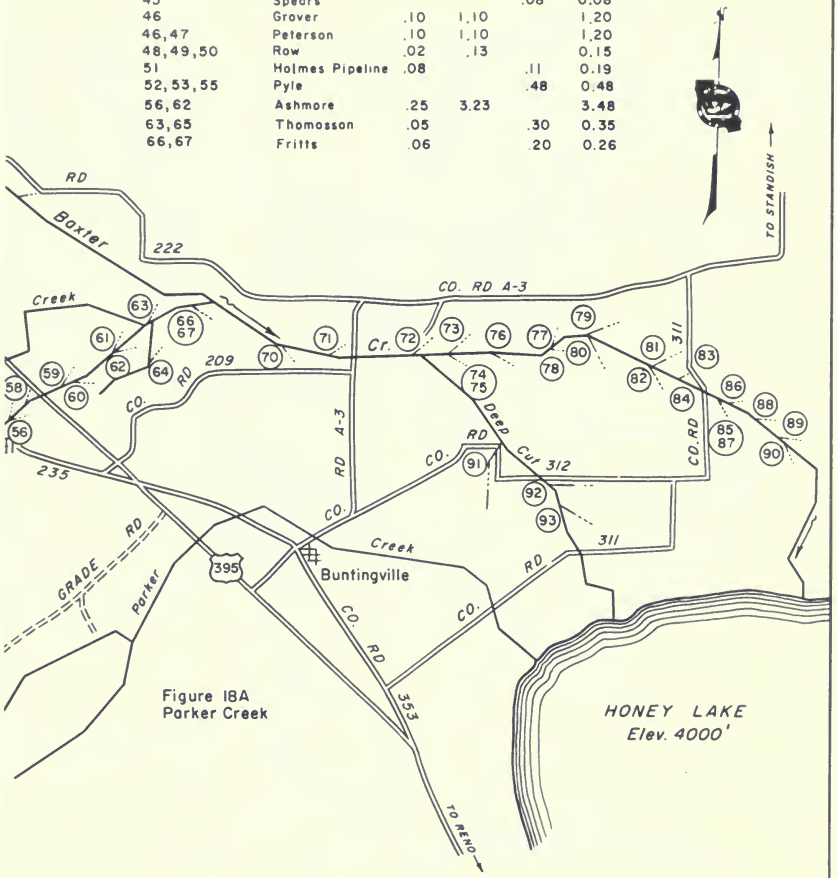
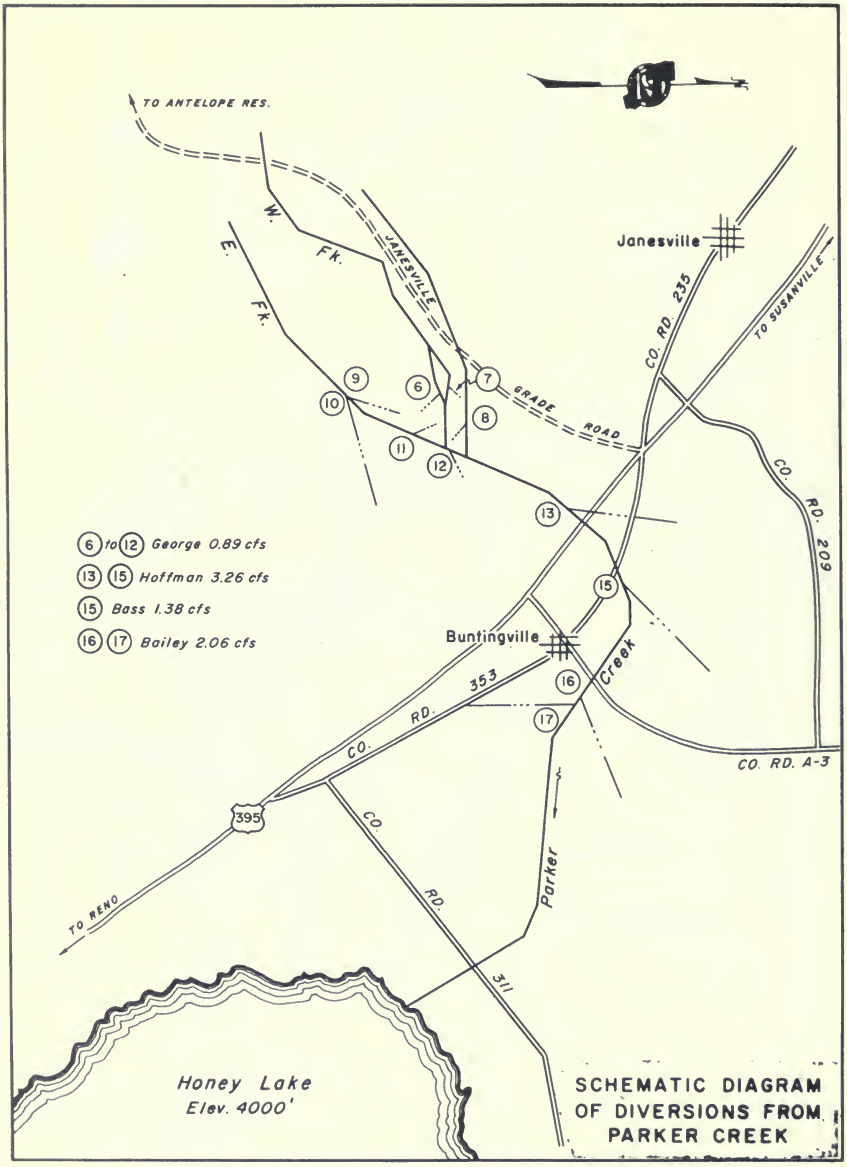


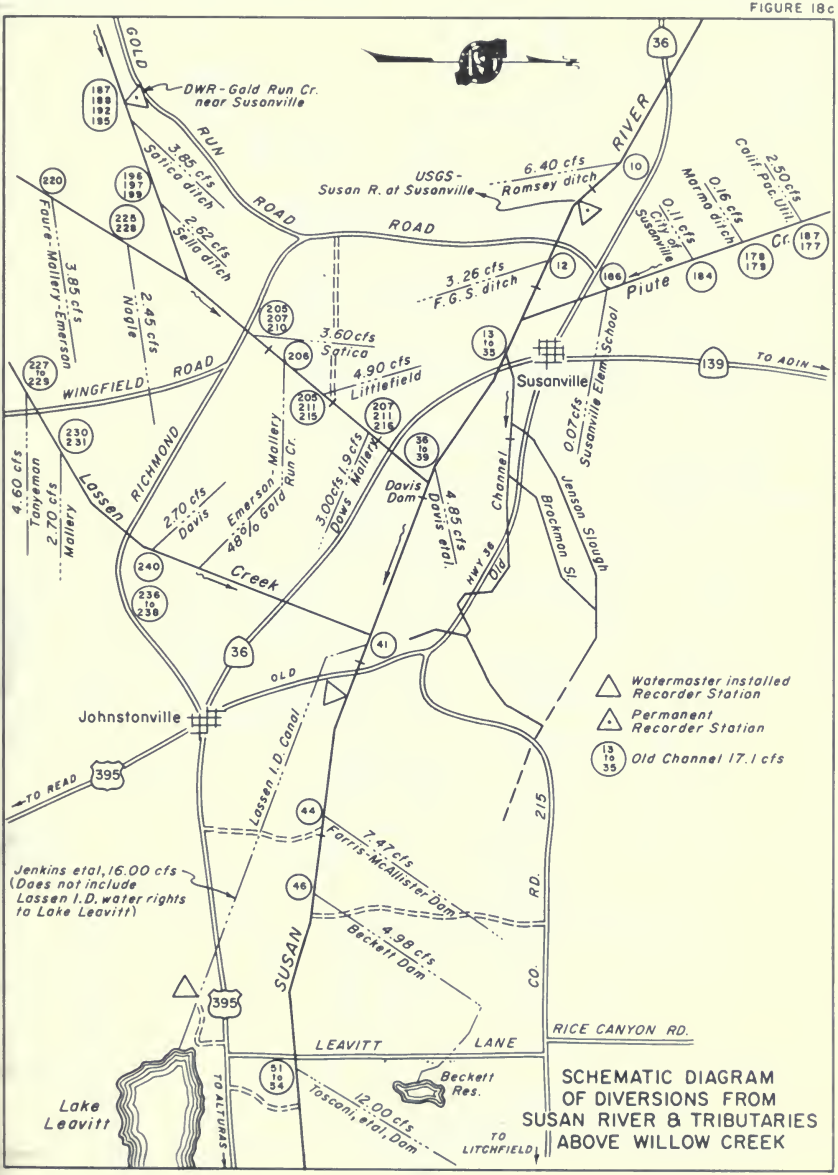
Figure 18A
Parker Creek

IPE RESERVOIR

SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
BAXTER CREEK

FIGURE 18b


TO ANTELOPE RES.
W. FK.
E. FK.
JANESVILLE
Janesville
CO. RD. 235
TO SUSANVILLE
GRADE ROAD
CO. RD. 209
6 to 12 George 0.89 cfs
13 15 Hoffman 3.26 cfs
15 Bass 1.38 cfs
16 17 Bailey 2.06 cfs
Buntingville
Creek
353
CO. RD.
CO. RD. A-3
395
TO RENO
CO. RD. 311
Parker
Honey Lake
Elev. 4000'
SCHEMATIC DIAGRAM OF DIVERSIONS FROM PARKER CREEK


GOLD RUN ROAD
DWR - Gold Run Cr. near Susanville
3.85 cfs Satica ditch
2.62 cfs Satica ditch
3.85 cfs Faure-Mallery-Emerson
2.45 cfs Nagle
WINGFIELD ROAD
RICHMOND ROAD
3.60 cfs Satica
4.90 cfs Littlefield
4.60 cfs Tanyeman
2.70 cfs Mallery
2.70 cfs Davis
Emerson-Mallery 48% Gold Run Cr.
3.00 cfs 1.9 cfs Davis Mallery
4.95 cfs Davis
Davis Dam
Lassen Creek
USGS - Susan R. at Susanville
6.40 cfs Ramsey ditch
3.26 cfs F.G.S. ditch
0.11 cfs City of Susanville
0.16 cfs Normo ditch
2.50 cfs Calif. Pac. Util.
0.07 cfs Susanville Elem School
Susanville
Piute Cr.
TO ADIN
Channel
Jenson Slough
Brockman Sl
HWY 88 Old
OLD
Johnstonville
TO READ
Lassen I.D. Canal
7.47 cfs Farris-McAllister Dam
Jenkins etal, 16.00 cfs (Does not include Lassen I.D. water rights to Lake Leavitt)
4.98 cfs Beckett Dam
SUSAN RIVER
215 RD.
CO.
LEAVITT LANE
RICE CANYON RD.
Beckett Res.
12.00 cfs Tosconi, etal, Dam
TO LITCHFIELD
TO ALTURAS
Lake Leavitt
Watermaster installed Recorder Station
Permanent Recorder Station
Old Channel 17.1 cfs
SCHEMATIC DIAGRAM OF DIVERSIONS FROM SUSAN RIVER & TRIBUTARIES ABOVE WILLOW CREEK

[3] = Schedule 3
[5] = Schedule 5
[6] = Schedule 6

(56), (94) to (96) Barry, Story, Fraley, Mendiboure, Wagner — 2.00 cfs [3], 1.95 cfs [6]

(71), (75) to (78) McClelland — 2.67 cfs [3], 7.33 cfs [5], 0.75 cfs [6]

(57), (58), (59) Gibson — 2.00 cfs [3], 5.50 cfs [5]

(58) to (61), (79), (80), (84) Mapes — 2.91 cfs [3], 8.03 cfs [5], 2.35 cfs [6]

(81) to (83) DeWitt — 0.33 cfs [3], 0.92 cfs [5], 0.50 cfs [6]

Theodore — 0.50 cfs [3], 1.38 cfs [5], 2.60 cfs [6]

(85), (86) Calif. Fish & Game — 3.33 cfs [3], 9.17 cfs [5], 6.70 cfs [6]

(82), (87) to (89), (91), (92) Copezzoli, DeWitt — 2.00 cfs [3], 5.50 cfs [5]

(99) (102) Beckett — 2.30 cfs [3], 5.50 cfs [5], 5.15 cfs [6]

(98), (100), (101) Bailey — 1.33 cfs [3], 3.67 cfs [5]

(97) Tanner — 1.33 cfs [3], 3.67 cfs [5]

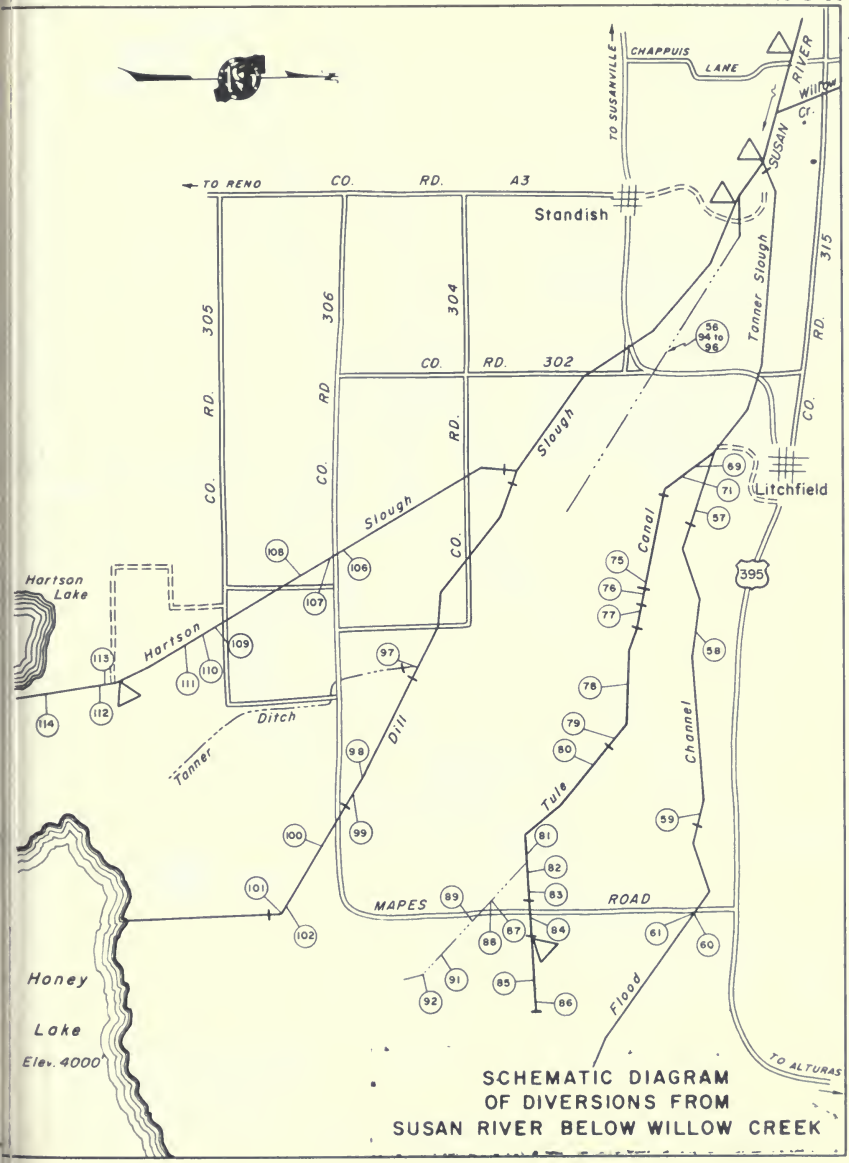
(106), (109) Buckner — 0.25 cfs [3], 0.85 cfs [6]

(107), (108) Beckett — 0.25 cfs [3], 0.95 cfs [6]

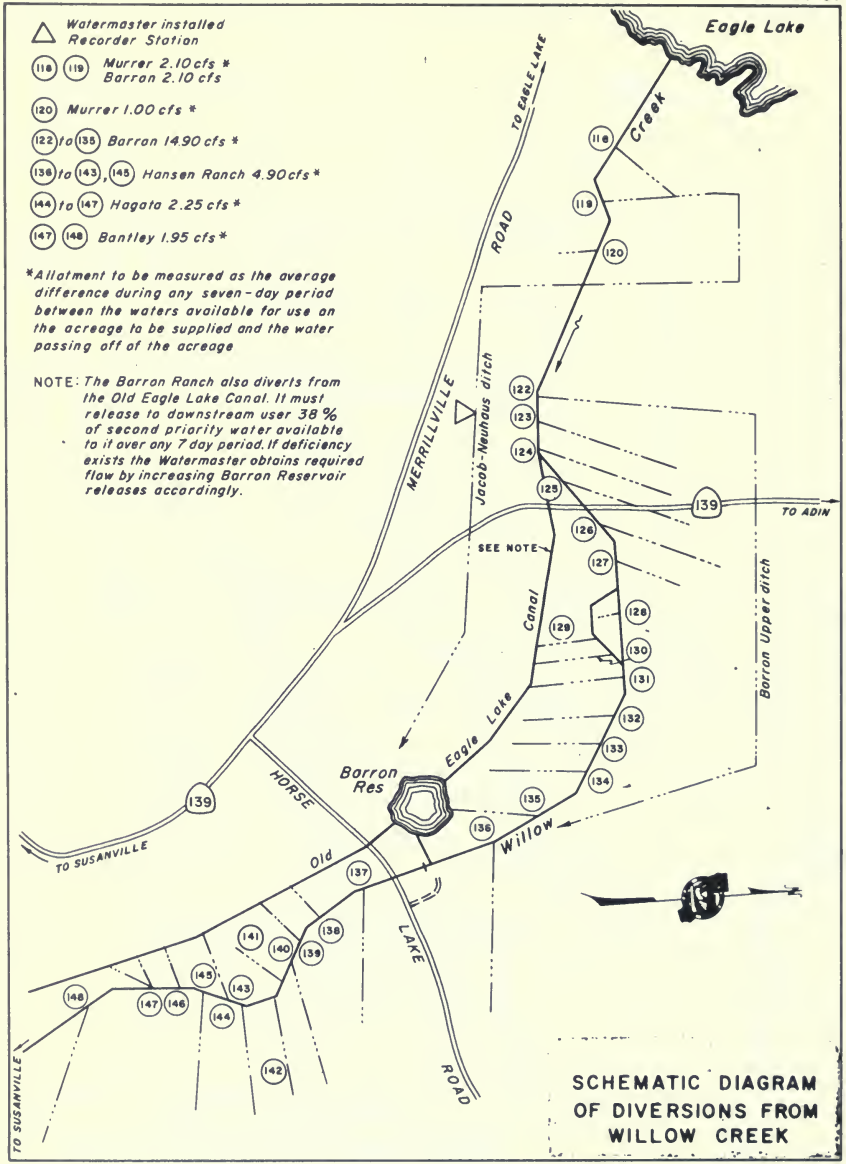
(110), (111) Anderson — 0.25 cfs [3], 1.30 cfs [6]

(112) to (114) Calif. Fish & Game 3.10 cfs [6]

△ Watermaster installed Recorder Station



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
SUSAN RIVER BELOW WILLOW CREEK


Watermaster installed Recorder Station
(118) (119) Murrer 2.10 cfs * Barron 2.10 cfs
(120) Murrer 1.00 cfs *
(122) to (135) Barron 14.90 cfs *
(136) to (143), (145) Hansen Ranch 4.90 cfs *
(144) to (147) Hagata 2.25 cfs *
(147) (148) Bantley 1.95 cfs *
*Allotment to be measured as the average difference during any seven-day period between the waters available for use on the acreage to be supplied and the water passing off of the acreage
NOTE: The Barron Ranch also diverts from the Old Eagle Lake Canal. It must release to downstream user 38% of second priority water available to it over any 7 day period. If deficiency exists the Watermaster obtains required flow by increasing Barron Reservoir releases accordingly.
Eagle Lake
TO EAGLE LAKE
ROAD
Willow Creek
MERRILLVILLE
Jacob-Neuhous ditch
TO ADIN
SEE NOTE
Canal
Barron Upper ditch
Eagle Lake
Barron Res
HORSE
Old
Willow
LAKE
ROAD
TO SUSANVILLE
TO SUSANVILLE
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SCHEMATIC DIAGRAM OF DIVERSIONS FROM WILLOW CREEK